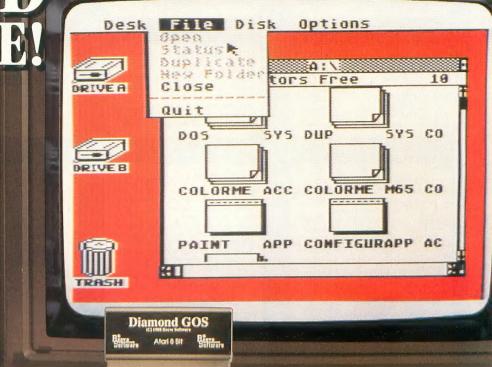
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### **XETEC DIP-FIX**

The March 1989 **Antic** I/O had a fix for running Newsroom page design software with a Xetec Graphix interface on a Panasonic 1080i printer. The number of the DIP switch to be reset was left out. The complete instructions are: Set the Newsroom printer driver to Epson MX-70 and set Xetec *DIP switch 2* to the ON position.—ANTIC ED

LIST MISSED

As a long-time Atari enthusiast and Antic contributor, I was interested in your collection of existing products for the 8-bit in the January 1989 issue of Antic. However, you didn't mention my educational chemistry game, **Reaction Time**, distributed by Queue, Inc., 562 Boston Ave., Room S, Bridgeport, CT 96610; (800) 232-2224 or (203) 335-0906. Frankly, I think this is a good and unique product, although the advertised price of \$69 may be too high.

In addition, you don't show Dynacomp, Inc. in your list of sources for 8-bit products. Their most recent catalog lists over 70 programs for the Atari. Quite a few are old, but they are inexpensive and available.

Karl Wiegers Rochester, NY

The Dynacomp catalog includes educational, business, finance, statitistics, engineering, science, graphics and utility software—not to mention games. The catalog is available for \$2 from Dynacomp, Inc., 178 Phillips Road, Webster, NY 14580. (800) 828-6772, (716) 265-4040.—ANTIC ED

### NO DUMPING

IBM PCs and clones have the ability to dump what appears on the screen to a printer, when you press a [PRINT SCREEN] key. Is there some way of doing that with my 800XL? There are so many occasions when I would like to do that without destroying what's on the screen.

Jerry Fraenkel Franklin Square, NY

Sorry, there's no built-in screen dump for the 800XL or for any 8-bit Atari. We ran an article and program called Kwik Dump in the March 1985 Antic. But that program only works with graphics file formats—and requires some programming knowledge.

### ANOTHER CONTENDER

I feel compelled to write in response to your article "SpartaDOS X or Atari DOS-XE? Which is Number 1?" I would like to mention a third choice, namely MyDOS 4.5.

MyDOS is density smart, supports RAM-disks of all shapes and sizes, supports double-sided disk drives (like the XF551) and supports hard disk drives and their subdirectories. Best of all, it's free from any of the major commercial information services (GEnie, CompuServe, etc.), users groups, and many BBS's.

Also the source code is included, allowing advanced users to fiddle with the DOS if they like. Unlike SpartaDOS X and DOS-XE, MyDOS is almost completely compatible with DOS 2.0 and 2.5, without the need for special drivers. And with a utility program, it will even do batch processing.

Now tell me, why should I spend even \$10 on a DOS when I can have the power of MyDOS for free?

Glenn Garman East Rochester, NY

MyDOS went public domain in December, 1988. If you don't have access to MyDOS elsewhere, you can still get MyDOS with manual from Newell Industries at 1213 Devonshire, Wylie, TX 75098. (214) 442-6612. A nominal fee is required to cover shipping and handling.—ANTIC ED

### TOP DOS?

In his review of SpartaDOS X (March 1989), Matt Ratcliff calls it the best DOS "bar none!" Although I think he writes some great stuff for the Atari, I disagree. I believe TopDOS 1.5 + is the ultimate disk operating system for 8-bit Atari computers. Read your own review in the July 1985 issue, Everything You Wanted to Know About DOS.

I don't like MS-DOS, and that is why I chose the Atari. I don't need the complex SpartaDOS commands, and I've had it with those who proclaim such complexity to be better.

Dave Bambaloff Tacoma, WA

Indeed, our 1985 review referred to TOPDOS as "one of the most friendly, full-featured and useful DOS's for the Atari." Unfortunately, as far as we know, TopDOS is no longer commercially available—nor do we know how it performs with the XF551 disk drive. Antic Arcade's Charles Cherry says that TopDOS was his favorite DOS—until SuperDOS came along (which is why the Arcade Catalog now carries SUPERDOS.)—ANTIC ED

### SAUCERIAN TROUBLE

In case some of your readers had trouble getting Listing 2 of *Saucerian Shootout* (January 1989) to RUN, there is a simple fix—delete line 1120 and then RUN the program as instructed. This will create a working copy of the game.

John Reiser Omaha, NE

This letter helped us track down a very obscure and infrequently occurring bug in the program that makes our BASIC loader listings. We've been using that program since 1985, and this is the first time we've had trouble with it. Thanks for letting us know about the problem and sending us the fix!—ANTIC ED

### LOVE AFFAIR

What started out as a Christmas gift for my two children has turned into an adventure, a love affair of sorts between me and our Atari XE Game System. I have forsaken sleep, a few mills, and *Wheel of Fortune* to be with my new companion. My lovely wife went so far as to ask if I have named this newcomer to our family.

We bought the XEGS as a substitute for the scarce Nintendo, but quickly tired of the cartridge games (new ones are scarce for this system). Just when we were ready to trade all this for a new go-cart engine, I discovered Antic at our local Walden Bookstore. From the December 1988 issue, I ordered a used Indus disk drive from Computer Repeats. It arrived with five utilities and complete instructions. The disk drive gave me a new respect for the Atari XEGS, and the system is just beginning to grow.

The January 1989 Antic held an even bigger surprise—one of your Antic Classifieds advertisers was Joe Butner of Oak Hill, WV, about eight miles from me. I got in touch with him and he brought over a copy of his game, *Fountain of the Gods*. Not only did my family find a great game (best in our collection), but we found a friend with knowledge of our system that he willingly shares.

Jeffery Sanders Beckley, WV

We're glad to bear that XEGS buyers are discovering the excellent computer hiding inside. Now, if only Atari would do a bit more to spread the word. We could still end up with an 8-bit renaissance!—ANTIC ED

### SIDEWAYS PRINT PROBLEMS

Running an expanding business using my Atari 800XL, I found my spreadsheets were getting too big for single-sheet pages, so I recalled a sideways spreadsheet program, *Tapeless Spreadsheet Printer*, from the August 1987 issue. I've typed-in arti-

cles before and had no problem running them on my Atari XMM801 printer, but Tapeless was no go. HELP!

> Larry Whiting Surrey, BC, Canada

Tapeless Spreadsheet Printer does not work with ALL Epson-compatible printers. Because the program downloads a sideways character set to the printer, it will only work with a printer that has the built-in RAM to use an alternate character set. The program was not designed for the Atari XMM801, unfortunately.—ANTIC ED

### RAMBRANDT IN COLOR

How can I get RAMbrandt to print or dump graphics onto my Star NX-1000 Rainbow printer? Is there a utility program I should be using?

> John McCarthy Brockton, MA

RAMbrandt can only print in black and white, unless you have an Okimate 20 color printer. To get your pictures to print in color, you can save them in Micro Illustrator format from RAMbrandt. Then you can use YEMACYB/4 software (\$29.95) from Electronical Software, P.O. Box 8035, Rochester, MI 48063. This color screen dump utility can print your Micro Illustrator formatted pictures in full color.—ANTIC ED

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

### LABELMASTER, SMALL BUSINESS SYSTEM

(applications software) Black Moon Systems P.O. Box 152 Wind Gap, PA 18091 32K disk

Maintain your mailing lists and print out the labels you want with Label-Master Version 1.6. This powerful tool lets you design labels with up to six lines and a width of 34 characters, and create and edit your data onscreen. Multi-Column Lister Version 1.2 makes it possible for you to print your LabelMaster data files in one to four-column formats, on labels or paper. This utility works with Epson (and most compatible) printers. The two are sold as a package, for only \$10.

Both LabelMaster and Multi-Column Lister are included in SBS, The Small Business System (\$30), a group of programs designed to help run a small business. The program modules include Invoicing, Purchasing, Income and Expense Entry, End of Year Inventory, and Reports. Reports can be generated by month, any group of consecutive months, or by year. The Reports Module even includes a Sales and Tax Report and a Profit/Loss Report.

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**Page Marshal** is a suite of programs forming a user-friendly, text-with-graphics Page Processing System. Origi-

nally developed as a structured programming chart drafting tool, the system can also produce electronics diagrams, business forms, statistical charts, graphs, tree structure charts and musical scores—not to mention standard uses for desktop publishing, such as advertisements or newsletters. A different character set or font can be used on every line, and a wide range of custom font files is included.

The screen display exactly mimics the printed copy. The program can work with an entire page in RAM, up to 80 columns wide and 80 lines deep. Any DOS 2.5 compatible word processor can produce text files for this system, or text can be entered in Page Marshal's own Typer mode.

### PS USER UTILITY DISK

(utility software) No Frills Software 800 East 23rd Street Kearney, NE 68847 \$31.95, 48K disk

The PS USERS UTILITY DISK contains a set of utility programs for use with Broderbund's Print Shop. The icon viewer lets you load four icons at a time and an icon cataloger sets you print specified icons. Font and border catalogers are also included. Other options let you delete, rename or undelete your PS files, or even automatically transfer PS icons from one disk to another. Additional features let you mix PrintShop graphics with Atari fonts, to print custom labels and bookmarks.

### EDIT8, THE ENHANCEMENT

(utility software) Logic One P.O. Box 18123 Cleveland, OH 44118-0123

Instantly examine and modify your

programs with EDIT8 (\$9.95), the one and only RAMdisk sector editor. The editor works with Binary or BASIC programs, text or data, and includes dual-display and a restore feature. According to Logic One, EDIT8 works with all upgrades, under DOS 2.5 or SpartaDOS 3.2.

Also from Logic One, The Enhancement (\$7.95) lets you use your RAMdisk like a real disk. Working with Atari DOS 2.5 or SpartaDOS, The Enhancement lets DOS know when to recover and when to set up the RAMdisk, making it both automatic and "coldstart safe" — every time.

### ATARIWRITER PLUS PATCH

(utility software) LVAUG c/o AW+ Patch P.O. Box 1307 Allentown, PA 18105 \$5, SpartaDOS 2.3 or 3.2

Lehigh Valley Atari Users Group (LVAUG) is now offering Craig Gaumer's patch which allows you to use your copy of AtariWriter Plus with SpartaDOS 2.3 or 3.2. With this patch you can run AW+ from a RAMdisk or hard drive, Exit to SpartaDOS and return to AW+ without losing your working copy, read directories of drives 1 through 8 directly from the AW+ menu, and more. Documentation is supplied on disk along with the patch.

New Products notices are compiled by the Antic staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.

## Super LOCATOR

### Fast multi-file text finder

By Jeffrey Summers, MD

Ever try to find a specific bit of text when you forgot what file it was in? Save time and frustration by letting Super Locator do the searching for you. This BASIC program works on 8-bit Atari computers with 48K memory and a disk drive.

If you use your Atari 8-bit for word processing, sooner or later you will forget which file contains some vital piece of information. Previously, the only way to find that lost information was to load files one-by-one into your word processor, search for the desired phrase and if it wasn't in that file, move on to the next.

This very time-consuming process can make you wonder why you ever gave up your trusty typewriter to begin with. Now, Super Locator can make finding your text relatively painless. Super Locator will quickly search all the files on your disk for any specified string.

### **GETTING STARTED**

To see how it works, type in Listing 1 and check it with TYPO II. Be sure to SAVE a copy to disk before you RUN it.

If you have trouble typing the special characters in lines 10000-10030, don't type them in. Instead, type Listing 2, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, LOAD "D:LOCATOR.BAS" and then ENTER "D:LINES.LST." Remember to SAVE the completed program before you RUN it.

To use Super Locator, RUN the program and insert a disk with several word processing text files on it. Super Locator asks which files it should search, giving you the chance to narrow your search. Simply press [RETURN] to search all the files on the disk in Drive 1.

Entering a directory specifier limits the search and enables you to search the files on a different disk drive. The directory specifier is the same as you would use with DOS. For example, if all of the files you wish to search are on the disk in your second disk drive and end with the extender .TXT, you would enter "D2:\*.TXT".

If you could further limit this to files that started with the letter A, you would enter "D2:A\*.TXT". To check all of the files on Drive 2, enter "D2:\*.\*".

Next, you are asked for the string you want to find. This string may have up to 20 characters. The program also asks if the search should be case sensitive, distinguishing between uppercase and lowercase letters. Although you can enter lowercase characters into the string, be careful to use only capital letters when answering other prompts.

End the string with [RETURN]. The program clears the screen and lists the names of the files it is checking as it goes along.

If the program finds your specified string, the string is displayed on the screen along with the text immediately preceeding and following it. This lets you check the context of the phrase you are searching for, to make sure that this is the instance you wanted to find.

For instance, if you were looking for a specific recipe for chocolate chip cookies, on a disk full of recipes, you could search for the string "chocolate". Your results might look like this:

CHECKING D1:DOS.SYS CHECKING D1:AUTOMATE.TXT

CHECKING D1:LETTER.DOC CHECKING D1:RECIPE.CPI Found in file D1:RECIPE.CPI CHARLIE'S FAMOUS CHOCOLATE CAKE THE

VING FROM PANS. CHOCOLATE FROSTING

DIA & KEN'S MOCHA CHOCO-LATE CHEESECAKE

ACKAGE SEMI-SWEET CHOCO-LATE CHIPS

RECIPE.CPJ looks like a good place to look for that recipe. If you know the exact title of the recipe, you could specify "Toll House Cookies," instead. But if your search is too narrow, you risk missing your text because of slightly different wording, punctuation or spelling.

Each time the program finds the string, it will ask whether you wish to Continue searching (the program will continue to check that same file for another occurrance), move to the Next file and continue the search, or

stop (Exit). When the program has gone through all of the files specified on the disk, the program stops.

### PROGRAM LOCATING

Super Locator does not distinguish between word processing files and programs. Thus, you can also use Locator to search a disk for a program that may use a particular prompt. You can look for anything in a quoted string or a BASIC REM statement. You can even search for text within machine language programs. The "context" may be meaningless in these instances, but the program will find the data in any case.

Rochester, New York physician Jeffrey Summers has written numerous useful programs for Antic, including Antic Data-X (Revision B appeared in the December 1988 issue) and Job Jar Atari (January 1989).

Listing on page 34

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## AUTORUN Selector

Total control over your settings

By Jason Strautman

Ever known the frustration of trying to get to DOS from a disk with an AUTORUN.SYS file on it? AUTORUN Selector lets you disable the AUTORUN file on booting, with just the press of a button. This short BASIC utility (translated from machine language) works on all 8-bit Atari computers with disk drive.

f you're like me, you've got a lot of disks with AUTO-RUN.SYS files on them. And if you're like me, sometimes you need the familiar DOS menu for file copying and other housekeeping tasks. So I always had to keep a separate disk with no AUTORUN files, just DOS.SYS and DUP.SYS, for the times I needed the DOS menu. This seemed like a waste of a disk, so I designed a short solution, AUTORUN Selector.

When you append AUTORUN Selector to your favorite AUTO-RUN.SYS files, the next time you need to go to DOS, just press the [SELECT] key as you boot the disk and AUTO-RUN Selector will skip over your AU- TORUN.SYS file and load DOS.

### **GETTING STARTED**

Type in Listing 1, SELECT.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, SELECT.BAS creates the machine language program, SELECT.EXE, and writes it to your disk. Antic Disk Subscribers will find SELECT.EXE on the monthly disk.

Listing 2, SELECT.M65, is the MAC/65 source code. You do not need to type it in to use AUTORUN Select.

Before AUTORUN Selector will work, you must appended the SE-LECT.EXE file to the top of the AU-TORUN.SYS file you want it to work with. Here's how to do it:

- 1. Make backup copies of SE-LECT.EXE and the AUTORUN.SYS file you need to modify. Keep the originals in a safe place—we'll work with the backups.
- 2. Type DOS to bring up the DOS 2.0 (or DOS 2.5) menu. Make sure SE-LECT.EXE and your AUTORUN.SYS file are on the same disk.
  - 3. Type the following:
  - C [RETURN]

AUTORUN.SYS, SELECT. EXE/A [RETURN]

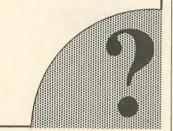
This copies your AUTORUN.SYS file onto the end of SELECT.EXE. The SELECT. EXE file now contains AUTO-RUN Selector and a copy of your AU-

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TORUN.SYS file.

- 4. Delete the AUTORUN.SYS file. You don't need it anymore because SELECT.EXE contains a copy of it.
- 5. Rename SELECT.EXE to AUTO-RUN.SYS.

This AUTORUN.SYS file is the finished product. The AUTORUN.SYS file will load and run just as it did before, whenever you boot the disk. If you press the [SELECT] key while booting, AUTORUN Selector will skip over your AUTORUN.SYS file and load DOS instead. Make sure you have the DUP.SYS file on your disk when you do this.

AUTORUN Selector will also work whenever you press [SELECT] and any other console key. For example, XL/XE owners who want to use AUTORUN Selector with a program that doesn't use BASIC can simply press both the [SELECT] and [OPTION] keys while booting.

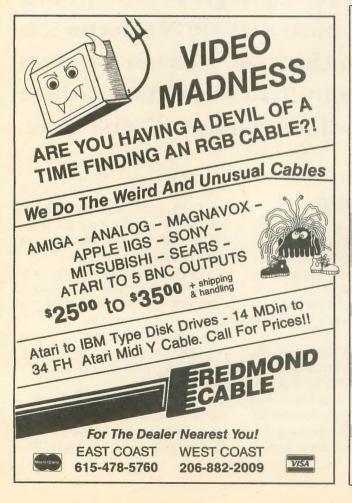
AUTORUN Selector first checks DOSVEC (10, \$0A) for the address to branch to if DOS is selected. Next, it takes the value from CONSOL (53279, \$D01F) and determines which console keys are being pressed. If bit 1 of CONSOL is clear, the [SELECT] key is being pressed. This is true even when the [SELECT] key is pressed along with other console keys.

If [SELECT] is *not* pressed, AUTO-RUN Selector continues to load the rest of your AUTORUN.SYS file.

Otherwise, if [SELECT] is pressed, AUTORUN Selector jumps to the address it took from DOSVEC and loads DUP.SYS which contains the DOS menu.

Jason Strautman lives in San Antonio, Texas and has been programming for the last five years. This is his first appearance in Antic.

Listing on page 33





### Customizing the Atari

### **Operating System**

### **Device Handlers:**



By Bob Martin & Martin Mercorelli

This article, the first of a two-part series for experienced BASIC programmers, explains how the Atari operating system bandles the various devices attached to your computer and gives you a step-by-step approach to adding a new device bandler or modifying an existing one. The BASIC programs work with any Atari 8-bit computer, disk or cassette.

The ability to change your computer's operating system is a very powerful technique. Atari 8-bit owners are in for a treat, because there are several ways to customize your system through software. To illustrate, two programs are included with this

article. The first creates a device handler that does nothing. (Believe it or not, that can be useful.) The second modifies the printer handler to print non-printing characters.

The printer handler was written for the Epson RX-80 and the C.Itoh Prowriter, but it should work with any printer capable of dot-graphics printing. Each program illustrates a different aspect of creating device handlers.

What good is adding a device handler to the operating system instead

of having your program perform the same function? To answer this, let's look at how the operating system interacts with the outside world.

### **CIO ROUTINE**

Among the Atari operating system's best features is the way it handles input and output (I/O). All I/O operations are generally performed in the same way, regardless of which peripheral device is accessed—disk drive, keyboard, screen editor or printer. We can simplify I/O because it's normally handled through the Central Input/Output routine (CIO).

In BASIC, I/O is done so naturally that you hardly notice the complexity of what is actually happening. One example is the use of CIO to send data to the printer:

First, open the device through a CIO control block with the command OPEN #3,8,0,"P:". This does three things: 1) it tells the operating system to OPEN CIO control block #3 (IOCB3) for I/O and to prepare for I/O to the printer; 2) the 8 tells the operating system that data will flow from the computer to the printer; and 3) the "P:" tells the computer to send data to the printer. Therefore the OPEN command is for initialization.

Summing up, a device handler simply tells the computer how to talk to a device. The computer needs to know the direction of data flow, which path (or channel) it will use, where to find data, where to put it and how much of it to grab.

### **DEVICE HANDLERS**

If CIO is the computer's I/O interface to the user, then the device handlers are the computer's interface to peripheral devices.

For example, how does the computer send data to the printer? Since the printer *isn't* a disk drive or keyboard, your Atari obviously needs a special routine, which is part of the device handler.

Each device handler has six routines: OPEN, CLOSE, GET, PUT, STA-

TUS, and SPECIAL (See *Figure 1*). In BASIC these machine language routines are controlled through I/O commands. For example, when your program issues the command OPEN #3,8,0,"P:" it is actually using the OPEN part of the printer handler.

Every handler contains six machine language routines and a table containing the address of each routine minus one.

Why the minus one? CIO accesses a function by pushing its address onto the stack, then executing an RTS (Re-Turn from Subroutine). The RTS instruction directs the program to the address on the stack *plus* one. To ar-

### Each device handler has six routines.

rive at the correct address, we must compensate by subtracting one from our target address.

### HATABS

CIO finds the address of the appropriate handler table in the Handler Address Table, HATABS. This table is a 38-byte block of memory occupying locations 794—831 (\$031A—\$033F).

Each device handler has its own three-byte entry in the Handler Address Table. The first byte is an ASCII character representing the name of the device (K for keyboard, D for disk drive, etc.). The next two bytes hold the address of that device's handler table

When you issue an OPEN #3,8,0,"P:" command, for example, CIO looks through HATABS for a "P". Then it uses the next two bytes to find the address of the printer's handler table. Once found, CIO searches the printer's handler table for the address of the printer handler's OPEN routine.

Finally, CIO executes the printer handler's OPEN routine (See *Figure 2*).

Again, CIO finds the handler in two steps:

- 1) Get the address of the appropriate handler table from HATABS.
- 2) Get the address of the handler routines from the handler table.

### WRITING YOUR OWN HANDLER

Now that we know how CIO locates the handler table, here's how to make your own handler:

- 1) Write the program for the handler. (The handler must have the functions listed in *Figure 1*.)
- 2) Set up a Handler Table with the address of each function (minus one) in the order given in *Figure 1*. The special function is a jump instruction beginning with a decimal 76, followed by the two-byte address of the special routine.
- 3) Make an entry in the Handler Address Table for the device.

That's all. Now let's focus on the two examples and how they implement these steps.

### **NULL HANDLER**

Type in Listing 1, NULLHAND.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, NULLHAND.BAS installs the Null Handler, N:, on Page Six. Once installed, you can test the handler by typing:

### LIST "N:"

This command LISTs the program to the N: device. If your Atari responds with a "READY" prompt, the handler is properly installed. If you get an error message, however, something went wrong. Check NULLHAND.BAS for typing errors, and try again.

One use of the null handler is to check a disk for a scrambled file (Error 164). One way to check is to use DOS to copy the file to the screen. This, however, is quite time-consuming. Instead, copy the file to the N: device. The Null Handler will

do the job in a jiffy.

To copy a file to the Null Handler, select choice C from the DOS menu and type:

D:filename,N:

If the file is read completely without error, then it's intact. All the files on a disk can be checked by typing "D:\*.\*,N:".

### PROGRAM TAKE-APART

Listing 2, NULLHAND.M65, is the MAC/65 assembly language source code for NULLHAND.BAS. You do not need to type it to use the N: handler.

Lines 540-590 contain the N: handler's routines (see step 1, above). Since the N: handler does nothing, all six functions can be handled by the same "do-nothing" routine. This routine does nothing but end with an RTS instruction and return the appropriate error codes to CIO. *All* handler routines must do this.

Ending in an RTS means that CIO pushes the return address on the stack before jumping to the handler. This feature is useful if you're modifying an existing handler because it gives you two entry points.

Error codes are handled the same way. When CIO jumps to the handler, the Y register contains error code 146—"Function not implemented in handler." If the Y register isn't changed, CIO will print "ERROR 146" and return control to you. Since the handler does nothing, the only error message to return is 1, "No error has occurred." It should be in both the accumulator and the Y register. So putting a 1 into the A and Y registers is all this handler does before executing the RTS.

Lines 440-520 build a Handler Table for the N: handler (see step 2, above). Since all the functions are the same, there are five NULL-1 values followed by one JMP NULL.

The Handler Table is always that easy to write—although the addresses usually aren't all the same. Just remember to subtract 1 from each of

FIGURE 1

### **Handler Table Organization & Functions.**

OPEN—Initialize the computer for I/O.

CLOSE—Release the resources of the computer for other uses.

GET—Receive one byte from the device. On return, the accumulator holds the byte.

PUT—Put one byte out to the device. The byte is in the accumulator on entry to the put byte routine.

STATUS—Test the readiness of the device.

SPECIAL—Jump to a special routine not covered above.

On entry to the above handler routines, the X register holds the CIO control block number and the Y register contains a 146 (error code for function not implemented in handler). On return to CIO, the accumulator and the Y register contain the appropriate error code.

the first five functions.

Lines 220-420 insert the N: device and the address of the N: handler table into the Handler Address Table (See step 3). This is the most complicated part of the program. Lines 220-310 look for a blank spot in HATABS. Lines 350-420 place the ASCII value for N into HATABS, followed by the two-byte address of the N: handler table (low byte, high byte).

Since the letters indicating the devices are separated by a two-byte address, the routine that searches for a blank spot checks every third byte in HATABS.

Finally, we place the program's initialization address, INSERT, into INITAD (location 738, \$02E2). This forces the program to start as soon as it is loaded into memory. Ending the initialization routine with an RTS returns control to DOS.

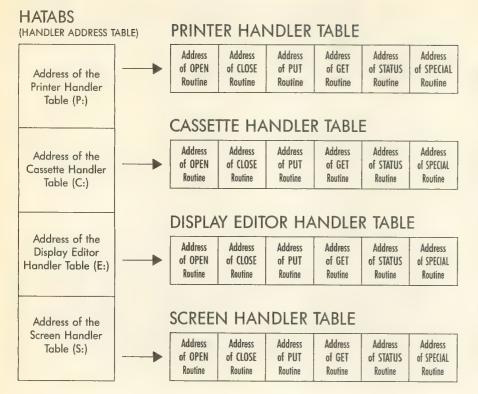
### **USING PRINT HANDLER**

The modified printer handler makes it easier to get a hard copy of

a file or BASIC program containing non-printing characters (such as the "clear screen" character). Normally, non-printing characters aren't printed. But a special problem arises when the printer recognizes a character as a control character. Control characters are acted upon, not printed. And at the very least, they produce a messy printout. But with the modified printer handler, a neat printout is easily produced.

Type in listing 3, PRHAND.BAS, checking it with TYPO II, and SAVE a copy before you RUN it. When RUN, the program will ask you what type of printer you own. Type [1] if you own an Epson printer, [2] if you own a C.Itoh printer, or [3] for other types of printers. Next, press [RETURN] and the program will create a file called EPSON.EXE (or CITOH.EXE for C.Itoh owners). This is the program which creates and installs the new printer handler. Antic Disk Subscribers will find both versions on the monthly disk.

### FIGURE 2



Copy the appropriate .EXE file to a DOS 2.0 or DOS 2.5 disk. Make sure this disk has a DOS.SYS file. Next, rename the .EXE file to AUTORUN.SYS. This disk will automatically install the new printer handler each time you boot your system with it.

Once installed, type POKE 1791,255 to activate the handler. POKE a zero into 1791 to return to normal printer operation. Your Atari will use the modified printer handler until you turn off the computer or press [RESET].

Listing 4, PRHAND.M65, is the MAC/65 source code for the printer handler. You do not need to type it.

### **TAKE APART**

The only difference in our printer handler is the PUT BYTE routine, lines 1030—2570.

Line 290 jumps to the old PUT BYTE routine, and the rest of it just checks for non-printing characters and supplies graphics data.

For the PUT BYTE routine, the byte

to be sent is in the accumulator when CIO jumps to the handler. This routine first checks location 1791 (\$06FF) to see if the modification is enabled. If so, it then checks to see if the byte to be sent is a non-printing character. For a non-printing character, the control code for eight dot-graphics bytes is sent, followed by the dot-graphics data.

Most printers plot dot graphics the same way. First, the printer is sent a control code enabling dot-graphics mode. On Epsons and compatible printers, the code is 27, 76 ([ESC]-[L]). Then comes the number of bytes the printer should expect. On Epsons and compatibles, a two-byte integer (low byte, high byte) is sent. The complete command for eight-dot graphics mode bytes is 27,76,8,0. On the C.Itoh and compatibles, it's 27,83,48,48,56 (or [ESC]-[S]-[0]-[0]-[8]). Then the eight bytes of graphics data are sent to the printer.

To use character data from the Atari internal character set, we must make

it acceptable to the printer. Although your Atari and your printer can define a character in eight bytes, they arrange these bytes differently.

The Atari's character set is organized in horizontal slices starting at the top, and the printer needs vertical slices starting to the left of the character.

To change a screen character data for the printer, each byte for the screen must be sliced one bit at a time, re-formed into eight new bytes and sent to the printer. In other words, bit zero becomes byte one for the printer, bit one becomes byte two, etc.

Lines 210-240 contain the handler table. This table is even simpler than the last one. The new handler table is left blank so that the old table can be copied to it. Notice that the fourth two-byte address (corresponding to the location of the PUT BYTE routine) has a label, making it easy to store the location of the PUT BYTE routine in the new handler table.

Lines 340-800 contain the initialization routine. Lines 340-430 search for the P: handler entry in HATABS. Then lines 460-620 copy the following address to a zero page location and replace the P: handler table address with the address of the new P: handler. The old PUT BYTE address is copied to the jump instruction (line 290) after adding 1. And the new PUT BYTE routine address (minus 1) is placed in the new handler table. Finally, the address of INSERT is stored at \$02E2.

### **NEXT MONTH**

Both handlers operate without communicating with the user. The ability to let the user select options is often important for a handler. In Part 2 of the series we'll add I/O to the screen and add everything necessary for a complete handler.

Remember that when writing a device programmer, you only need to worry about half of the I/O conversation—CIO does the rest.

Listing on page 31



## Print Pro

By Earl Haley

HELP files printed on balf the pages.

Ever wish you could print the HELP file from the Antic monthly disk in two columns? Two Column Print-Pro prints text files in two columns on most 80-column printers. This handy BASIC program works on all 8-bit Atari computers with at least 32K memory, disk drive and printer.

As a thrifty Atari owner, I don't like wasting half a page of computer paper every time I use my 80-column printer to print 40-column documentation (such as the Antic monthly disk's HELP file). Inspired by the useful Doc Print-Pro program in the November 1988 Antic, I decided to write a similar program.

Two Column Print-Pro reads a 40column text file and prints it in two columns on an 80-column printer without requiring you to rewind the paper. You can print the whole document at once, or have the printer pause after each page. Since the program doesn't use any printer control codes, it should work on just about any 80-column printer.

### GETTING STARTED

Type in Listing 1, TWOCOLMN.BAS, check it with TYPO II and SAVE a copy to disk before you RUN it.

If all you ever plan to do with this program is print the HELP file from the Antic monthly disk, the program will tell you all you need to know! Three or four simple keypresses will do it all.

The first screen asks whether you are using standard or legal size paper. Next, choose either continuous feed, or a pause after each page.

To print the HELP file from an Antic disk, put the disk in Drive 1. With the printer ready, choose option [1], ANTIC HELP FILE. The program will read the HELP file and print it in two columns.

### PREPARING YOUR OWN TEXT FILES

To print your own document in two columns, load any text file into

BASIC saved program, use menu RUN or LOAD and RUN. BASIC listed program, ENTER BAS Most of the programs on this disk are written in Atari BASIC. Some require special hardware or specific operating instructions. Please read the matching issue of ANTIC Magazine for complete then RUN. Assembly language 'Load and Go' file. Remove BASIC, boot DOS, type L then enter the Assembly language source code (Atari Assembler Editor) Must be compiled. "SAVEd" MAC/65 assembly documentation. SUBSCRIPTION Info & Orders: (800) 347-6969. language source code. Must be compiled. BACK ISSUE Orders: (800) 234-7001 (Visa or Mastercard only, please.) Machine language object file.
Same as .EXE but not 'Load and
So'. See corresponding article.
Reserved for DOS system files.
Text file. Usually accessed
by another program.
ACTION! language source code. . OBJ By popular demand, we've included MDRE music files for Antic's AMP Music Processor (Antic Disk Bonus, Dec. 1988). This side features The Flight Of The Bumble Bee (filename "DIBEE"). And we've put a sleighfull of holiday songs on . ACT Must be compiled. .LGO Requires the (You need the Antic Music Processor (AMF.EXE) to hear the songs. It was featured on the All programs from ANTIC issues dated prior to August 1984 were reproduced from ANTIC's Archive. We've updated them from our MELP columns and most are compatible with the XL and XE machines. We have worked to insure that our programs operate as published, but we consider all our software listings to be works in progress which we encourage you to personalize and enhance. Dec. 1988 Monthly Disk.) Whenever there is sufficient room, we will be including TYFO II on the monthly disks. TYFO II is in LISTed form, and must be ENTERed before using. It will not RUN from the menu. Good luck, and ENJOY! -ANTIC ED The menu that appeared on the screen when you booted the disk will only RUN programs with a .BAS extender. If you try to run a program and the response is 'cannot run Filename', check the file extender with this - END -

your word processor. Change the top margin to 0, the left margin to 0, and

Easy Scan II

The 1989 Antic Award Winner! (See May 1989 issue) Easy Scan II is now even better! In addition to using Graphic Modes 8 and 15, the Easy Scan II activare is updated, and now supports Graphic Modes 9, 10, 4 it as well! Allows for some impressive results!

Easy Scan, the ONLY image scanner for the Atari 8-bit line, yet, at an affordable price. Uses the latest in technology - Fiber Optics, to "scan" the image into the computer. The image can then be printed out, or save as a standard 62 sector file. Included at mage can then be printed out, or save as a standard 62 sector file. Included at nextra charge, are utilities fools. Print Shoe Four Woharts 1 Re., and more! Also included is a Dees Disk.

System Requirements: Atari XL/XE/XE GS with at least 128K RAM. Also needed, is an Epson Explored Fixed Print Shoe Four Woharts 1 Re., and more! Also included is a Dees Disk.

System Requirements: Atari XL/XE/XE GS with at least 128K RAM. Also needed, is an Epson Explored Fixed Print Shoe Four Woharts 1 Re., and any of their newer counterparts.

Price: Only 839.35 (+ SAH - see below)

Earlier versions can be updated for \$20.00 A Demo Disk is also available for \$5.00

Check/money order (US funds), with order. USA/APO/FPO add \$3.50 SAH. CDD (USA only) \$3.00 extra. Canada/Moxico: add \$7.00 SAH.

In novative Concepts Shawn Drive Warren, MI 48093 USA

Phone: (313) 293-0730

Dealer Inquires Welcome!

Note: You can also find us on Compuserve, in the Atari 8-bit section, in DL15, you can reach as at Compuserve \$76044,1764

the right margin to 38. Then *print the* document to disk as a new file. Be sure to use a different filename if you don't want to write over your present file!

TWOCOLMN.BAS should be able to read and print any 40-column (or less) text file. However, only files with an extender of .TXT will be listed by the program's disk directory, so it's a good idea to add a .TXT extender to the new file.

To preview the printed file, load your new file back into your word processor. Remove any extra carriage returns, and this time save the file to disk as a regular text file. (If you print the file to disk again your word processor will probably just put all those unwanted carriage returns back in, to fill out what it thinks are blank lines

at the end of pages. As a result, your printout will contain a lot of unwanted blank lines.)

You should now be able to print your file in two columns using TWOCOLMN.BAS. Simply choose option [2], OTHER, when the program asks what file you want to print. At the next prompt, enter the name of your file, and your text will be printed in two-column format. Of course, I can't guarantee that you won't end up with half a sentence all by itself on the last page!

### CUSTOMIZING THE PROGRAM

Two Column Print-Pro doesn't contain any machine language routines, so it should be fairly easy to customize. If your printer is capable of elite size type (12 characters per inch), you might insert your own printer control code in the program for a slightly neater printout.

You might also want to adjust the left margin by adding one or two blank spaces in line 290. For example, this line will make your left margin two spaces wider:

290 ?#2;" ";COL1\$(S,F);COL2\$(S,F)

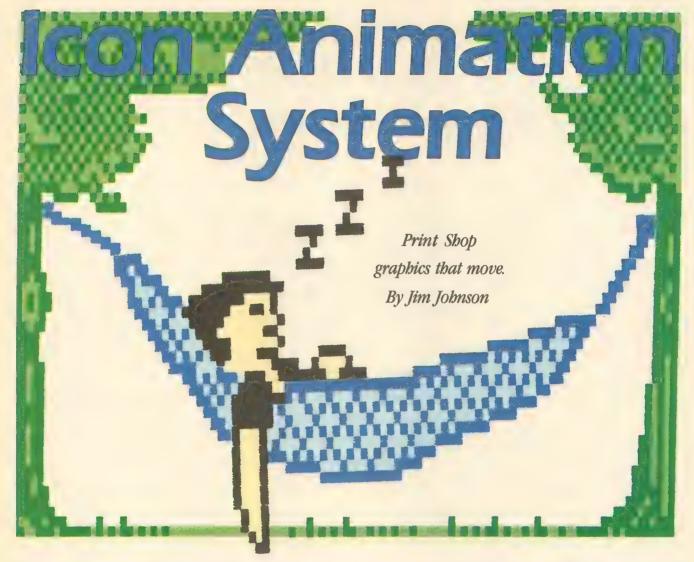
The program removes the XXXs and some of the control codes in the Antic Disk's HELP files. If you would like to have them all print, change line 150 to:

### 150 INPUT #1,R\$

If you decide to use single sheets of paper (so you can print on both sides of the page), watch out for a possible snag—when I remove the sheet of paper from my printer, the "out of paper" red light comes on. When I put in another sheet of paper, the red light goes out, but I often forget to make sure that my printer is reset to "on". The program just sits there, waiting for me to turn on the printer. If I turn the printer back on, the program resumes where it left off.

Earl Haley lives in Lockport, New York.
This is his first appearance in Antic.
Listing on page 39

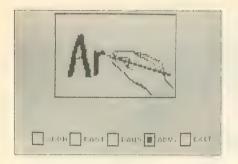


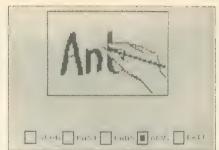


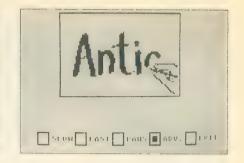
Now you can make easy computer animations using your Print Shop Graphics Editor as a cell animation studio. This two-part BASIC program consists of a Sequencer and a separate Scripter that takes advantage of RAMdisks. It works on 8-bit Ataris with at least 48K memory and a disk drive.

he Icon Animation System makes 8-bit animation easier than ever. You can use it as a tool to learn the basics of cell animation—or simply as an animated billboard. Using the Graphics Editor from Print Shop or Print Shop Companion (Broderbund) as a cell animation studio, you can put together as many as 25 images in a page-flipping animation of up to 100 frames!

The Sequencer module lets you organize your cells in any order, even repeating or skipping frames as desired. Once you have your animations running, the Scripter program lets you link several animations together and run them from disk. You may also run them from a RAMdisk for smoother, faster operation.







### **GETTING STARTED**

Type in Listing 1, ANIMATOR.BAS, check it with TYPO II and SAVE a copy to disk before you RUN it.

If you have trouble typing the special characters in lines 160, 170 and 31000, don't type them. Instead, type in Listing 3, check it with TYPO II and SAVE a copy. When you RUN Listing 3, it creates these hard-to-type lines and stores them in a file called LINES.LST. To merge the two programs, type NEW then LOAD Listing 1, "D:ANIMATOR.BAS" and then ENTER "D:LINES.LST". Now, SAVE "D:ANIMATOR.BAS" and type NEW.

Next, ENTER "D:LINES.LST", delete line 160 and LIST "D:LINES.LST" back to disk. Now follow the same procedure with Listing 2, SCRIPTER.BAS. ANIMATOR.BAS and SCRIPTER.BAS share line 170 and 31000, but SCRIPTER.BAS does not use line 160. Remember to SAVE the completed programs before you RUN them.

### MAKING PRINT SHOP CELLS

You will need at least two disks, one formatted from the Print Shop program, another formatted with DOS 2.0 or 2.5. To create the cells or pictures for your animation, start Broderbund's Print Shop or Print Shop Companion and go to the Graphics Editor.

In the Graphics Editor, you can draw an original picture or load any picture from your library of Print Shop icons. Pictures made with other programs can be converted to Print Shop for use with IAS, but you will need the necessary conversion programs.

You can convert most types of Atari picture files (including many ComputerEyes pictures) to Micro Illustrator files using *Rapid Graphics Converter* (Antic, November 1985). *Newsroom Converter* (Antic, December 1988) is needed to convert Newsroom files to Graphics 8. You can then transfer your Micro Illustrator files and Graphics 8 files to Print Shop with *Graphic Shop* (\$19.95, Arcade Catalog, AP156).



Keep in mind that IAS has a limit of 25 different pictures per sequence—although you can repeat selected pictures within the actual animation, for a total of 100 frames. IAS is best suited to cyclic animation, that is, sequences that repeat themselves, such as a running horse, a juggler, or

a waving hand.

When your picture is ready, save it to your Print Shop data disk. Now, go back to the Graphics Editor and change the picture. You can move an arm, blink an eye, or whatever. Save the new picture to your data disk using a different name. (I use CEL1, CEL2, CEL3, . . .) Repeat the process of editing and saving files until you have the effect you want. Remember that you can only use 25 cells in one IAS sequence!

### USING THE SEQUENCER

Now that you have your cells, place your IAS program disk in Drive 1, turn on your Atari and RUN "D:ANIMATOR.BAS". Once the Sequencer menu appears, use the arrow keys to move the cursor, and press [RETURN] to select the option indicated.

CREATE ANIMATION FILE creates a sequence file from your Print Shop images. The program asks you for the number of pictures you wish to load, up to a maximum of 25. Then the program will load your files—starting with the *first* icon on the data disk. This way, you do not have to pick and choose each image to be included in your sequence.

Once all the images have been loaded, you go to the Graphics Screen. Here, IAS will flip through your images in the order loaded. The controls below the picture let you adjust the speed of your animation, freeze the action, or advance one by one through the frames.

Use the arrow keys and [RETURN] to control IAS. With the cursor on SLOW or FAST, pressing [RETURN]

will change the animation's speed slightly. Keep pressing [RETURN] until the animation runs at the speed you want. Select PAUSE to freeze the animation, and PAUSE again to continue. ADV will advance your animation one frame and will only work in pause mode. Use EXIT to get back to the main menu.

At any time, you can return to the Graphics Screen from the main menu by choosing VIEW ANIMATION.

The SEQUENCER lets you rearrange the order in which the cells are displayed. Any picture can be used more than once in any given sequence, to produce a more complex

name be sure to use the device, filename and extension. To load the sample on this month's Antic Disk, put the disk in Drive 1 and at the "FILENAME TO LOAD" prompt type "D:SAMPLE.SEO".

If you plan to use the Scripter, use .SEQ extenders on your animation filenames. The Scripter looks for a .SEQ extender on sequence files, and .SCR on script files.

### USING THE SCRIPTER

With the Scripter program you can go beyond the memory limits of your Atari and create even more complex animations by loading your sequences

While you are limited to 25 different pictures, you can use cells more than once, to define a sequence of up to 100 frames.

animation. While you are limited to 25 different pictures, you can define a sequence of up to 100 frames. Entering a zero as the picture number will insert a pause in the animation. To exit the sequences, press [RETURN] and you will be returned to the Graphics Screen, where you can view your altered animation.

Once you've finished your sequence, you can save it with the SAVE ANIMATION FILE option. Then you can load your sequence, or any of the samples on this month's Antic Disk, using LOAD ANIMATION FILE. You will be prompted for a filename to load. Press [RETURN] at this prompt to see a directory of the disk in Drive 1.

Animation files consist of the stacked, uncompressed picture and sequence data. When entering a fileto a RAMdisk and writing a "script" to run those files in any order. I designed Scripter specifically to run with a RAMdisk.

IAS automatically checks to see if you have a RAMdisk installed. If you don't, the Scripter will load files from Drive 1—but the beauty of the routine is in the speed of a RAMdisk.

When you RUN Scripter, the menu gives you the option to CREATE, LOAD, SAVE and RUN scripts, to exit to the SEQUENCER, or to LOAD FILES TO RAMDISK. If you don't have a RAMdisk, an X will appear in the box opposite this option, and you will not be able to select it.

Whether you're using Drive 1 or a RAMdisk, the sequence files you want to combine all must be on the same disk.

To load files into the RAMdisk you

can either SAVE the files to "D8:", or use the Scripter's LOAD FILES TO RAMDISK function. This option will automatically clear the RAMdisk of *all* files (including DUP.SYS and MEM.SAV). It then transfers all sequence files with the extension .SEQ from Drive 1 to the RAMdisk until the RAMdisk is filled.

If you have a small RAMdisk, it may run out of room before all your .SEQ files are copied. To make the best use of your RAMdisk, you should remove any unnecessary .SEQ files from your floppy disk before you begin. (See *Dr. Brilliant's Incredible Atari Brain Transplants* (Antic, November 1988) to learn how to expand your RAMdisks.)

If you want to keep the files in the RAMdisk while loading new files, hold down [OPTION] while you select this function, and *keep* it down until the screen displays \*LOADING\*.

When you choose CREATE SCRIPT, you will be given a listing of the .SEQ files on disk. To create your script, simply pick the sequences you want to play, and then specify how many times that sequence should run before the next sequence loads and plays. Individual sequences can be inserted anywhere in the script and can be used as often as needed.

IAS can be used to set up demos, or as an electronic signboard system. Experienced programmers could extract the animation routines for use in their own programs, including games—and really ambitious programmers could even try adding a sound track.

PRINT SHOP, \$44.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3200, (800) 527-6263.

Jim Johnson is a Print Shop addict living in Seaford, Delaware. His program Iconverter was published in the December, 1987 Antic.

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### Doomed

Can YOU survive three minutes in the death pit? By Tony Barnes



Doomed is a dodge-and-fight game so challenging that you only need to survive three minutes to win. This BASIC program works on all 8-bit Atari computers having at least 32K memory, with disk or cassette.

They throw you into the cell, and as you hit the cold hard floor they say, "If you can survive three minutes in that death pit you can have your freedom!" Three minutes, you think. Could it be all that bad?

Suddenly, strange beasts come at you from either side. Faster and faster they advance, sapping the very life from you with every pass.

As you concentrate on lasting those three minutes, you notice that one of the beasts disappears, and then another. Then you realize that your mind waves kill these creatures!

### GETTING STARTED

To play Doomed, type in Listing 1, DOOMED.BAS, check it with TYPO II and SAVE a copy. If you have trouble typing the special characters in lines 50, 5530-5565, 11000-11010 and 20006-20010, don't type these lines. Instead, type in Listing 2. When you RUN Listing 2, it creates a file called LINES.LST. Merge this file with Listing 1 by typing LOAD "D:DOOMED.BAS and then ENTER

"D:LINES.LST". Cassette users: CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:". Remember to SAVE the completed program before you RUN it.

When you RUN Doomed and the main screen appears, press your joystick button to start the game. Pressing the joystick button will also bypass the introductory sequence.

Creatures attack from either side. Any creatures you can't avoid must be shot with your "mind-blaster". To activate it, press the joystick button while moving left or right.

The creatures on the ground are beyond range of your mind-blaster. Your only chance is to jump over them. Move the joystick forward to jump up. As you fall back, you may move left or right, zapping the upper-level creatures and evading the creatures on the floor.

As the game progresses, the ground begins to crumble away. Again, press the joystick forward to jump over the holes. Once you start to fall, move the joystick right or left to scramble onto the stable patches of bricks.

Flashing flags at the bottom of the screen indicate your remaining strength. Once you're down to your last flag, you're doomed to die—and your game is over.

Tony Barnes is a San Francisco community college freshman. His previous Antic games include Escape From Hell (June 1988) and Shutdown (April 1989).

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## DIAMOND OPERATING SYSTEM

Point-and-Click for the Atari 8-bit, Reviewed by Matthew Ratcliff



outed as the "ST junior," Alan Reeve's long-awaited **Diamond Operating System** is finally here on a bank-switched, piggyback, super cartridge. Diamond gives your 8-bit Atari a high-tech graphic user interface. Typing is replaced with "pointing and clicking." Commands are selected from "drop-down menus" and "popup dialog boxes".

First and foremost, Diamond is a replacement for DUP.SYS, the disk utilities package that comes on your Atari DOS disk. The graphic user interface is friendly, almost intuitive. Although Diamond is not exactly a jun-

ior ST, it is well executed.

With this cartridge comes a lot of potential. Soon to be delivered in final form, **Diamond Paint** and **Diamond Write** are graphics and desktop publishing-style word processing packages which will run under Diamond.

The advantage of Diamond is that the same graphic user interface can be employed for many applications. This minimizes relearning as you go from one program to the next. Think of all the different programs you use on your 8-bit machine now, each requiring a different command set. Programs that run under Diamond can eliminate all the confusion.

When you first put Diamond to work, you want to configure it for operation under your DOS of choice. I had no problem using the utility programs provided to create a CONFIG.OS file for ICD's SpartaDOS. Dia-

mond even works with the SpartaDOS X cartridge.

It's possible, though rather bizarre, to have MAC/65 piggybacked on top of the Diamond cartridge, on top of the SpartaDOS X cartridge, on top of the R-Time 8 clock cartridge. This is not very practical, however, and I had some problems on my system when running Diamond on top of the SpartaDOS X cartridge (Version 4.19). Diamond does run well from disk-based SpartaDOS 3.2d.

After the Diamond "desktop" is up and running, you need to load and run CONFIGUR.APP from the supplied utility disk. This lets you set up your system for ST mouse, joystick, KoalaPad, or Atari Touch Tablet operation. The default configuration is for an ST mouse in the second joystick port, which worked fine for my setup.

If you do not have a mouse, you can still control the system with the arrow keys on the keyboard, the space bar acting as the "mouse button". Pressing [RETURN] selects "default" menu options.

### **DESKTOP TOUR**

The desktop presented by Diamond places a menu bar across the top of the screen. Each menu heading (Desk, File, Disk, and Options) has a drop-down menu associated with it. For example, if the mouse pointer (black arrow) is moved over the word Options, a box will drop down below it. Underneath, the words Display, Confirm, Install, and Save Desktop will appear.

Moving the arrow over any of these words will highlight it in reverse video text. Press the [SPACEBAR] once (or double-click the mouse, or other external device button) to then activate this option.

For example, highlight Install and press [SPACEBAR]. A dialog box will pop up. This small menu usually comes up centered on the screen, on top of whatever was already there. In this case, the dialog box shows two prompts, Unit Number and Drive

Number, each followed by a single blank.

Any time a series of underline characters is displayed within a dialog box, this indicates a field in which some text should be entered. Move the mouse pointer to the Unit Number field and press the [SPACEBAR].

The pointer disappears, replaced by a flashing vertical bar which is the text cursor. Type the number of the drive you wish to install, such as 3, and press [RETURN]. The pointer will reappear, allowing a similar operation for the Drive Letter field. It is only logical to assign drive letter A to drive number 1, B to 2, and so on.

Below these fields are three smaller boxes with text inside them, referred to as "radio buttons" or simply "buttons". They are Install, Remove, and Cancel respectively. Cancel has an extra dark outline, indicating that this is the default selection, chosen whenever [RETURN] only is pressed. This default system works for *any* dialog box in the system. Place the arrow on Install and press the [SPACEBAR] and a new disk drive icon will pop up on the screen. The placement is automatic, but you may "drag" the icon elsewhere.

Drag?, you ask. If you point at any icon or window on the display, press and hold the button, and then move the pointer, a ghost outline of the item will move along with the pointer. Release the button and your icon or window will be transplanted to this new location, if it can fit. The Diamond keeps track of where everything is placed on the screen, and it will not allow icons to overlap.

I found it is best to allow Diamond to automatically place the drive icons. When I tried to place them manually, Diamond was very particular about how close together I set them, which made it very difficult to get my drives (all seven of them) laid out the way I wanted.

### ST LOOKALIKE

Diamond provides drop-down me-

nus and dialog boxes in a format very similar to the Atari ST's desktop in low resolution. The icons are oversized, taking up a big chunk of the screen. You won't find the "icon mode" for windows very useful (but then I never did on the ST either). Fortunately, an alternative "text mode" is provided.

At first, double-click response to the mouse was poor. I found myself using the [SPACEBAR] more often than the ST mouse button, until I discovered that the mouse click speed may be adjusted with the CONFIGUR.APP utility, under the Set Mouse Port option.

Whenever you double-click on a disk drive icon, that drive is "opened" by Diamond. A window is created with a directory of that disk displayed inside it. Date and time stamps are shown for SpartaDOS users, and subdirectories are indicated properly.

Double-clicking on a directory name will open up that directory. No more CHDIR command, followed by a separate DIR command is required here, simply point and click. The current directory path is shown at the top of the window, referred to as the title bar. I have found that, when several directory levels deep, Diamond does not always keep track of the current path.

For example, if I went down to directory \FRED\JAMES\BROWN and then clicked on the close button (the small X at the top left of every window), Diamond would indeed go back one directory, as expected. The files listed in the window would be from directory path \FRED\JAMES, but the title bar would only display \FRED. Closing the window and reopening it corrects the title bar.

In the drop-down menu under File, you will find options for opening a file, checking disk status, duplicating disks, creating a new folder, closing a file, or quitting. Selecting Quit will return control to built-in Atari BASIC, or to the cartridge, if one is mounted piggyback on top of the Diamond cartridge.

### NO SPEED DEMON

For normal disk maintenance, such as duplicating disks, you may still prefer your old-fashioned Atari DOS or SpartaDOS, since Diamond is much slower in all disk operations by comparison. Duplicating an Atari DOS 2.0S disk with Diamond takes over six minutes (with two drives), when it takes just over two minutes when using Atari's DUP.SYS.

In fact, just about anything you do with Diamond is going to be slower than you are accustomed to. This is the price you pay for all those lovely graphics. Any DOS for your Atari simply manages a 940 byte text display. Diamond must manage nearly 8K of graphics memory, including multiple objects like icons, menus, and windows. It does the job well, but it does take time. The Atari 800XL or 130XE cannot be expected to emulate the ST's desktop at the same speed.

Under the Disk menu you may format a floppy disk or copy files. Files may also be copied by dragging a file from one drive's open window to another. The Options menu allows you to set display preferences. Files may be shown as icons or text. If you choose icons, lots of time will be wasted scrolling around the window. Sort selections for file listings include no sorting (for faster window updates), sort by filename, extender, or file size. I generally sort by name, making files easier to find in a list.

The confirm option has a check mark by it to indicate that Diamond will ask you to confirm any operations that may destroy a file on your disk. Clicking on this entry removes the check mark highlight, indicating that no confirmation requests will be issued.

Install lets you add another disk drive definition, so Diamond will recognize your drives. I find it peculiar that Diamond will allow only seven drives, A-G, to be defined. An eighth drive is not allowed, limiting use with RAMdisks that must be addressed as D8:.

### SAMPLE PROGRAM

The file SKELETON.M65 was included in Diamond to assist you in writing your own desktop accessory. The skeleton file was incorrect, and it took a bit of deciphering of RESET.ACC to get it right. I spent several hours studying the source files and came up with COLORME.ACC. This accessory, when activated, will shift the desktop color to the next hue value (same intensity) and display a dialog box. Click the button, and the desktop will return to normal operation in the new color.

I was not successful in developing my own event handling, and did not explore the possibilities of radio buttons and more complicated structures for a dialog box. The source listing for COLORME.M65 is presented below.

```
1000 ;
        COLORME . M65
        UY MATTHEW RATCLIFF
1010
        (C) 1989, ANTIC PUBLISHING INC.
1011
        Use the
                  command:
1012
      ASM D: COLORME . M65 . , D: COLORME . EXE
1013
        To assemble this program.

Note that the FIRST 6 BYTES
must be shaved off COLORME.MAC
1020
1030
        to turn it into an accessory!
Use this program:
1040
        Use
1050
        10 OPEN #1,4,0,"D:COLORME.EXE"
20 OPEN #2,8,0,"D:COLORME.ACC"
1060
1070
1080
            FOR I=1
                      TO 6:GET #1, A:NEXT I
        30
            TRAP 60
1090
        40
                #1,A:PUT #2,1:GOTO 50
1100
        50
        60 CLOSE #1:CLOSE #2:? "COLORME
1110
      DONE"
. ACC
1120
           OPT NO LIST
1130
1140
           .INCLUDE #D:LIBRARY.M65
1160
           .INCLUDE #D:DMACROS.M65
1170
1198
                $2FF0
           ₩=
1200
           .BYTE " Color Me " ;10 Byte N
1210
ame
1220
           .WORD ENDACC-RUNACC ;Length o
  Accessory
           .WORD RUNACC ;Load address .WORD RUNACC ;Run Address
1230
1240
1250
      ;ACCESSORY VARIABLES
COLOREG = 710
1260
1270
1280
1290
      RUNACC
1300
            DODIALOG
                         24,60,COLOR50BJ,CO
LORTOUCH
           LDA COLOREG
1310
1320
           CLC
           ADC #$10
1339
                COLOREG
1340
           STA
1350
            EVENTDIALOG
1360
            RELEASEDIALOG
1370
           RTS
      COLORS
1380
           .BYTE " ",252,4,"Next Screen
1390
Color", 13, 13
1400 BYTE
                  252,1," Accessory",13
1410
           ·BYTE 252,1,"
                             by Mat*Rat",13
, 0
1420
      COLORSOBJ
1430
           BYTE
           . WORD COLORS, 8,8
1450
            BYTE
                  8,255
      COLORTOUCH
1460
1470
           .BYTE 0,148,0,136,255
1480 ENDACC
```

### **MULTI DRIVES**

I was able to install both my 10 meg FA-ST hard drive partitions, my XF551 floppy disk, my 1050 disk, and multiple MIO RAMdisks. I was even able to generate a RAMdisk using SpartaDOS's RD.COM, which then resided in the 800XL's internal 256K (RAMbo-XL) memory. Diamond honored this RAMdrive definition and functioned properly with it. Certain memory configurations for Diamond may not allow internal RAMdisks to be used.

When your window placements, drive icon definitions and other preferences are complete, simply select Save Desktop from the Options menu. Diamond will create a file called DESKTOP.INF on the default drive A. The next time your system is booted with Diamond and this disk, the initial display and settings will match those in place when the desktop was saved.

The trash can icon is for deleting files, of course. Simply drag a file from any open window over to the trash can and Diamond will delete it for you.

### **FEW PROBLEMS**

I have not run into too many problems with Diamond. The key to smooth Diamond operation is proper setup with DOSCONFG.BAS and then CONFIGUR.APP.

Diamond usually ran fine with the SpartaDOS X cartridge, but occasionally it would crash. I'm not sure if the problem is with my own highly-customized set-up or not—no one else I talked to had this problem.

Diamond does not return DOS error codes when a disk error occurs. It simply states that "A disk error has occurred". For example, SpartaDOS can access Atari DOS 2.0 and 2.5 disks, with no problems. However, when operating Diamond with SpartaDOS you cannot access disks in Atari DOS format. Diamond simply returns a disk error. Without an associated error code, I have no idea what the problem may be.

I have found that sometimes, when a disk error dialog box pops up, a crash of Diamond soon follows. Under normal operation (working with only one DOS, and disks formatted in that DOS, throughout one session with Diamond), problems are rare.

When two windows are open simultaneously, the bottom window does not get refreshed until it becomes the top (active) window. According to the programmer's reference for Diamond, up to four

You
can "drag"
the drive icon
to where
you want
it.

windows can be opened at once, but the Diamond cartridge allows only two disk drive windows open at any one time. The documentation mentions this, but doesn't explain why. If the cartridge supports four windows, I would expect the desktop to use them as well.

Copying multiple files can be tedious with Diamond. With the Atari ST you can draw a "lasso" box around multiple files, and then drag the whole passel of them over to another window or drive icon for duplication. This "lasso" feature seems to be lacking in Diamond.

The file selector employed in the CONFIGUR.APP program does not allow navigation of subdirectories. Nor does it allow the user to input wild cards to narrow down a set of file selections. Fortunately, this is not built into the Diamond cartridge, but

is a function of a separate program file. The program is provided as FILESEL.M65, in MAC/65 source code, on the Diamond utilities disk. Ambitious programmers should be able to perfect it.

Dragging files, icons, and other objects is very basic to the operation of any graphic user interface. You can drag with the joystick, touch tablet, or mouse, but not with the keyboard. The arrow keys, coupled with a console keypress could easily be implemented as a keyboard-controlled drag function, which should have been added for completeness.

The Diamond User's Manual covers the basics of the desktop as briefly as possible. The short manual has no table of contents, nor an index. Screen graphics are provided, which are very helpful for the novice.

The Diamond OS Programmer's Manual is provided for those who wish to write applications or accessories. The manual serves as a fair overview, but is in no way a complete reference guide. However, the source code for CONFIGUR.APP is provided, CONFIGUR.M65. It presents examples of dialog boxes, drop-down menus, a file selector, and more.

With slightly more complete documentation, and final versions of Diamond Paint and Write, Diamond OS is likely to become a very popular operating environment for the 8bit Ataris. The current release is quite workable, and I am eager to see what develops for Diamond.

### DIAMOND OPERATING SYSTEM

Reeve Software 29W150 Old Farm Lane Warrenville, IL 60555 (312) 393-2317

Requires minimum 48K memory. \$29.95 disk \$79.95 cartridge and Programmer's Kit (Limited introductory special—five units per store—cartridge, Programmer's Kit and Diamond Paint all for \$79.95)

### Antic Music Processor: Version 2.0

Now you can add lyrics and sound effects, Program by Steven Lashower

ntic Music Processor, the popular December 1988 Super disk bonus, came with a sample song that displayed song lyrics. But there was no apparent way to enter lyrics—author Steven Lashower had plugged in text directly at the programming level. Many Antic Disk users seem to have spent hours staring in amazement at the "Come Sail Away" composition and pondering, "That's great. . .but how can I do it?"

Now, Antic Music Processor, Version 2.0 (AMP) comes with a fully integrated lyric editor to give you that power. Version 2.0 also contains many new enhancements and additional features. Even more than the original version, this new Antic Music Processor is the most powerful music performer available for the 8-bit Atari sound chip. As you'll see in this issue's article about the AMP Song Contest Winners, the program has been used successfully for processing music as complex as Gershwin's *entire* "Rhapsody In Blue."

Your June 1989 Antic Disk—featuring Antic Music Processer, Version 2.0, plus the AMP Song Contest Winners as well as every type-in program from

## The new Note command produces sound effects.

this issue—will be shipped to you within 24 hours after receiving your order. Just phone Toll-Free to the Antic Disk Desk at (800) 234-7001. The monthly disk is only \$5.95 (plus \$2 for shipping and handling) on your Visa or MasterCard. Or mail a \$5.95 check (plus \$2 shipping and handling) to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107.

This article explains the new features and commands in Antic Music Processor, Version 2.0. If you don't already know how to operate the Antic Music Processor, you'll find full instructions in a large HELP file on this month's Antic Disk. Those on-disk instructions are likely to be necessary for your understanding of the user information that follow. Admittedly, Antic Music Processor is not a pro-

gram for Atari novices.

By the way, the December 1988 Antic Disk, also still available from the Disk Desk, includes the *AMS File Translator* utility program that converts widely available public domain files from Advanced Music System II into Antic Music Processor format.

Another good reason why you might want to own both versions of Antic Music Processor is that all the new features make Version 2.0 use more memory than its predecessor. This could cause problems loading extra-large song files created with Version 1.2.

You may be able to load massive files and play back most of the song in Version 2.0—but the end of the file might be damaged. Trying to edit over-large files can cause the program to lock up. Instead, load any such files into Version 1.2 and cut them down there. Size limitations will vary, depending on the memory available in your 8-bit Atari computer.

While you are editing your new songs, be sure to *save your files often*. On some rare occasions, Version 2.0 has locked up when the P command is typed in the Note Editor. Nobody has yet been able to get this bug

to repeat consistently, which would be the first requirement for fixing it. Any further information on this will appear, as soon as available, in **Antic** and on CompuServe's ANTIC ONLINE.

### USING THE PROGRAM

Copy Antic Music Processor, Version 2.0 to another disk formatted with DOS 2.0 or 2.5. Don't attempt to run it directly from the monthly Antic Disk. Be sure the new disk contains the DOS.SYS file. Use DOS command E to rename AMP2.EXE to AUTORUN.SYS. Turn off your computer and remove all cartridges. Place the disk in drive 1. If you're using an XL or XE, hold down the [OPTION] key while you turn on your computer. Antic Music Processor will load and run automatically.

Two new commands have been added to the Main Menu:

X—Exit to DOS—Press the X key and insert a disk with DUP.SYS to exit to DOS. All music data currently stored in the computer's memory will be erased.

W--Lyric Editor---Press the W key to enter AMP's integrated lyric editor.

L and S—Before, AMP was only able to load and save files to drive one. AMP Version 2.0 allows you to load or save an AMP file from any disk drive. For example, to load "Come Sail Away" from drive 2, you would type:

L D2:COMESAIL.MUS [RETURN].

### **NEW EDITOR COMMANDS**

L—Lyric Advance. Used to display and advance lyrics one syllable at a time.

Nx,y,z—Note command. One of the few complaints about AMP 1.2 was that it lacked the ability to produce sounds other than pure tones. Note is an extremely powerful command that can harness some of the power in the 8-bit Atari's sound generating hardware that until now, has never really been utilized in previous music programs.

AMP's new Note command gives

you the ability to produce sound effects and noise. Note is very similar to Atari BASIC's SOUND command. Instead of using four numbers like Atari BASIC, Note uses the following three:

x—Sound pitch (0-255) is exactly the same as the second number in Atari BASICs SOUND command—the lower the number, the higher the frequency of the sound.

y-Sound distortion (0-254).

z—Sound duration (1-126) in clocks. See *Figure 1* for a list of dura-

### LYRIC EDITOR

You can use AMP's integrated Lyric Editor by pressing W from the Main Menu. The Lyric Editor is divided vertically into different sections. In the upper-middle of the screen is a big blue 20 x 11 character window. Up to 11 lines of lyrics can appear in this window at one time.

To the immediate left and right of the window is a small pointer. Pressing [CONTROL] [UP-ARROW] will move the pointer up one line and [CONTROL] [DOWN-ARROW] will

	Antic Mu	sic P	rocessor Du	rations		
	Cle	ock Va	due of Duratio	n		
Note			Normal	(.)	()	Triplet
Whole Note	(W) ·	#	192*	XX	XX	128*
Half Note	(H)	#	96	144*	168*	64
Quarter Note	(Q)	#	48	72	84	32
Eigth Note	(E)	#	24	36	42	16
Sixteenth Note	(S)	#	12	18	21	8
Thirty-second Note	(T)	#	6	9	10	4
Sixty-fourth Note	(Z)	#	3	4	XX	2

\*—Since the clock values for these durations are larger than 126, they cannot be used with the Note command.

tions and their corresponding clock values.

Let's convert SOUND 0,121,10,8 into a Note command that will be played for 96 clocks, the duration of a half note:

x = 121

y = (10 \* 16) + 8

z = 96 (clocks)

The third number in Atari BASIC's sound command (distortion) must be multiplied by 16 and added to the fourth number (volume). The result gives us NOTE 121,168,96, which can be entered into the AMP music editor by typing:

N121,168,96 [RETURN]

move the pointer down one line. The line bracketed by the pointers is the "current lyric line." Then [CONTROL] [LEFT ARROW] and [CONTROL] [RIGHT ARROW] can be used to center the text in the current lyric line.

As you type commands, they will appear in the command line near the bottom of the screen. Error messages will be displayed just below the command line. The status line at the bottom of the screen shows three things:

- 1. The number of the current lyric line.
  - 2. Entry Mode, either Text or Play.
- 3. The amount of memory left for entering lyrics.

### **ENTERING LYRICS**

Let's go through the steps to enter the first line of lyrics for the song, "Come Sail Away" — I'M SAILING AWAY. To start out, type C from the Main Menu to clear out any music that might be residing in memory. Now, type W to enter the Lyric Editor.

First of all, we must tell AMP that we're going to enter one line of lyrics. The command for this is L=- followed by up to 20 characters. No more than twenty characters can be displayed on a single line of lyrics. If you type the line below, it will now appear as the top line in the lyric window.

L=I'M SAILING AWAY [RETURN] Next, we determine where to divide the lyrics up into syllables and breaks: I'M-SAIL-ING-A-WAY. Now we let AMP know about the syllables. Use [CONTROL] [UP-ARROW] to move the pointer back up one line.

Notice that the lyric line is now highlighted right under the window in big, blue Graphics 1 (ANTIC 6) text. Look just below the Graphics 1 line to find the letters which correspond to the syllables and breaks. These letters will be—E, I, N and M. Now type: S=EINM [RETURN].

The E and M are used because they are spaces separating words, and like syllables, spaces are considered breaks. Press [CONTROL] [RIGHT-ARROW] twice to center the line on the screen. To see how this line will look when played by AMP, type: P [RETURN].

This changes Mode in the status line from Text into Play. Watch the Graphics 1 line and press [RETURN] to simulate a Lyric Advance command. Continue to press [RETURN] until the status line shows Mode: Text.

You can abort play mode by pressing [ESC]. Pressing [ESC] while in text mode will return you to the Main Menu.

### LYRIC COMMAND SUMMARY

L= (followed by up to 20 charac-

ters) [RETURN]—Enters a line of lyrics into the Lyric Editor.

S= (followed by any sequence of letters from A to T) [RETURN]— Assigns syllables to the highlighted lyric text.

C = (followed by any sequence of letters from A to T) [RETURN]—Removes syllables from the highlighted lyric text.

P [RETURN]—Changes to Play Mode and will perform the high-lighted lyric text. Pressing [RETURN] repeatedly simulates the Lyric Advance command.

[CONTROL] [UP-ARROW]—Moves the pointer up one line. [CONTROL] [DOWN-ARROW] moves the pointer down one line

[CONTROL] [LEFT-ARROW] shifts the highlighted text one space to the right. The leftmost character, if any, will now "wrap around" and become the rightmost character. [CONTROL] [RIGHT-ARROW] shifts the highlighted text one space to the left.

[TAB]—Copies the highlighted line of lyrics down to the command line where it can be edited by pressing the [DELETE/BACKSPACE] key.

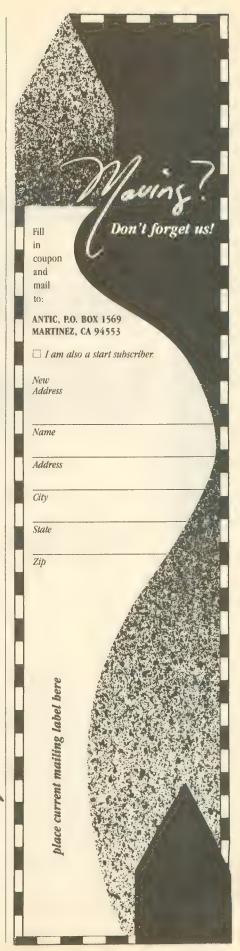
[CONTROL] [DELETE]—Deletes the highlighted line of lyrics and places it in a one-line buffer. Any previous line stored in the buffer will be lost.

[CONTROL] [INSERT]—Takes the line of lyrics currently in the buffer and inserts it directly above the highlighted line of lyrics.

[CONTROL] [CLEAR]—An alternative to the C = command, clears ALL of the syllables in the highlighted line of lyrics.

[ESC]—While in Play Mode, [ESC] can be used to return to Text Mode. While in Text Mode, hovever, [ESC] is used to return to AMP's Main Menu.

Steven Lashower studies Computer Science at California State University, Fullerton and works at Disneyland. He would be glad to see your comments and suggestions about Antic Music Processor, if you send them to him in care of Antic.



# Song Challenge Winners!

"Rhapsody In Blue" playing on your Atari

By Carolyn Cushman, Antic Assistant Editor

ntic Music Processor, our December 1988 Super Disk Bonus, proved to be one of Antic's most popular programs ever. We received many letters praising the program and suggesting improvements—and dozens of entries for the Antic Song Challenge. The editorial staff had a great time playing all the tunes.

The songs ranged from Vivaldi to Led Zeppelin and Billy Joel. One hardy soul entered Mussorgsky's "Pictures at an Exhibition" in two files for a total of 465 sectors of music. We received ragtime, polka, rock and pop

tunes—and even one original symphony. Despite the lack of a lyric editor in our first version of Antic Music Processor, two entries even had lyrics!

Our Grand Winner is G.R. Poole of Virginia Beach, Virginia. His five ragtime tunes, all "Music of Scott Joplin", showed an outstanding sensitivity to dynamics, tempo and sound envelopes. "The Augustan Club", a lively waltz tune, proved a favorite with several editors.

Mr. Poole uses his computer in his work in the beverage wholesale business. He comments:

"I have been an Antic reader since its beginning. Most of the programs never caught my interest. Stephen Lashower's Antic Music Processor is the first program that I can't get enough of. Being a retired Navy Musician who never mastered the keyboard, I have always been frustrated by the fact that the piano and I were not meant to be. Well, thanks to Antic I can do what I always wanted to do—play Scott Joplin. Thank you for a superb program."

The winner will receive an Antic Software product from The Arcade Catalog.

### RUNNER-UPS

We received so many excellent entries we have eight runner-up winners. All of the runners-up will receive this month's Antic Disk issue.

Unfortunately, many of the best song files we received were very large. There were so many good runner-ups, in fact, that we won't be able to put tion of Mussorgsky's piece, the movements, and the artworks they were based on.

The "Promenade" portion of this piece will be familiar to owners of XE/XL computers—the Audio-Visual Self-Test plays the first measure of this piece. (To see this Self-Test, type BYE from BASIC, then [SELECT] the

worth a runner-up position.

Peter Fries of Plano, Texas sent in a long version of Ravel's "Bolero" that deserves extra runner-up credit for including text in the form of a title screen and "program notes" on composer and arranger. This is a much handier system than trying to identify song files with just a file name! At 165

### "The piano and I were not meant to be. Well,



G.R. Poole

them all on disk. To fit in as many songs as possible we have even cut some of them to give you a sampling. Full versions of the contest winners will be available for downloading from ANTIC ONLINE this month. After you log onto CompuServe, type GO ANT-2550 and follow the onscreen instructions.

Runner-up Kevin O'Neil of Westminster, Colorado produced the huge "Pictures At An Exhibition" files, definitely pushing the Atari's limits. A programmer by day and a rock keyboard player by night, he demonstrated a real talent for meter and dynamics in translating this complex piece into four voices. Thoughtfully, he also included a thorough descripthanks to
AMP I can
do what I
always wanted
to do — play
Scott Joplin."
Grand Winner
G.R. Poole.

Audio-Visual test.)

Glenn Saunders of Needham, Mass. sent in six Led Zeppelin tunes (and one from The Monkees). The bouncy Led Zeppelin tune "D'yer Mak'er" was selected as a runner-up. It's definitely got a beat you can dance to!

Lee Vaughan took another runnerup spot with his rendition of a Bach Prelude. We picked this particular piece for its interesting trills and use of contrasting slurs and staccato.

Lyle Davis of Cleveland, Ohio sent in an original composition, "Symphony #1 in A". Considered "interestingly Modern" by one judge, others found it somewhat discordant, but the First Movement, with its heavy bass beat, was considered definitely



sectors, however, the whole song is too long to include on disk—and cutting it short would remove the gradual build in volume that makes "Bolero" so intense.

Mitch Cohen also produced an impressive, longer runner-up, with some interesting percussion effects—"Roundabout" by Yes.

Cornelius Robinson of St. Rose, Louisiana, entered several classic pieces. We picked his lyrical version of Antonio Vivaldi's "Spring" (from "The Four Seasons") as a runner-up.

Charles Anderson receives a runner-up award for his rendition of "Rhapsody in Blue" by George Gershwin—at 245 sectors, the longest single song file we received.

### HONORABLE MENTIONS

Honorable Mentions go to Roger Jensen of West Jordan, Utah, who sent in 13 songs (including "Chopsticks", "Beer Barrel Polka", and "Music Box Dancer"); David Warren of Poway, California ("Black Magic Woman" and "Dance of the Hours"); Nathan Becker of Thousand Oaks, California ("Splish Splash", "Wipe Out" and "Barbara Ann"); Robert Labelle of Ottawa, Ontario, Canada ("Summer of '69", "Stairway to Heaven").

### SOFTWARE LIBRARY

### TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *bold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [四] key—or [本] on the 400/800—then *release* it before pressing the next key. (Press [四] or [本] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [1].

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CTRL		CLEAR								
E CTRL	R	ESC DELETE  ESC TAB								

INV	ERSE VIDEO
FOF	
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	SHIFT INSERT
	CTRL TAB
	SHIFT TAB
0	水CTRL;
1	ESC CTRL 2 ESC CTRL
D	DELETE ESC CTRL INSERT

### TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [\*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

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### Doomed

Article on page 18

### LISTING 1

Don't type the TYPO II Codes!

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AC		Î		รี	T>	1	2		Hi			1			a												
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TE	1045	1	F	H	LK	ζ=	1	T	HI	EI	¥	P	04	5 (	CY	1											
SL				KE				48	, )	K 1	L:							0 6									
LE		Ī			LK				H						Y												
L S			F	M KE	LK			1 48	H						Y			≔ L 0 θ		. 5							
HIE		5	01	UN	D	0	. :	14	3	. 1	LØ		3	: 5	0	u	ΝI	D	1	ما	1	4	7 .	. 1	0	. 3	
	: POK	E	5	32	49	,	Х:	L-	17	73	e c	S	T:	> {	} >	+	9	NF (	2	T	<	8	)				
EF	1105			5 U		1	0	9:	I	F	5	T	> 8	3	T	H								. 3	=1	11	

```
$:P1$(Y1+3)="UE"
1110 IF 5T(8 THEN P0$(Y1)=L1$:P1$(Y1+3)="EU"
TH
      1115 POKE 705, PEEK(20): IF PEEK(53261) = 4 THEN Z1=1:GOSUB 60  
1120 IF PEEK(53261) = 8 THEN Z2=1:GOSUB
HT
      60
      1125
                POKE 53278,1:IF PEEK (53260) >=4 TH
B.K
      EN GOSUB 1200
1130 SOUND 0,0,0,0:SOUND 1,0,0,0:P1$=P
M$:POKE 53249,255:POKE 53278,1:GOTO 10
UQ
       05
      1150 FOR Q=0 TO 10:50UND 0,100,8,10-Q:
IF X1(57 OR X1)191 THEN 1165
1160 X1=X1-(ST=10)+(ST=6)
1165 Y1=Y1-1:IF ST=14 THEN P0$(Y1)=L2$
KM
DE
      1170 IF ST>8 AND ST<12 THEN POSCY1>=R1
      1175 IF ST<8 THEN PO$ (Y1) = L1$
      1175 IF 5176 THEN PUSCYTY = L15
1180 POKE 53278,1:G05UB 100:IF PEEK(53
260) >= 4 THEN G05UB 1200
1185 POKE 53248,X1:NEXT Q:GOTO 1000
1200 FOR T=15 TO 0 STEP -1:SOUND 1,PEE
K(53770),10,T:NEXT T
LD
HY
      1205 PHR=PHR-1:IF PHR<-1 THEN 1250
1210 COLOR 32:PLOT 11+PHR,11:RETURN
HR
                        :FOR I=0 TO 3:50UND I,0,0,0:N
UZ
      1250 POP
      EXT I
1255 FOR T=0 TO 15:SOUND 0,PEEK(53770)
.8.T:SOUND 1,PEEK(53770),12,T:NEXT T
1260 FOR T=15 TO 0 STEP -1:SOUND 0,PEE
PA
     20
YZ
KX
                1315
0.K
      1320
                ? #6;"##
     1325
1330
                                                                     (i) 11 ;
                                                      AAA
DP
                                                                      F | 80 2
      1335 ? #6;"###
1340 ? #6;"НООННОВНИЯ ПОНИВОВНО
FZ
      1345 P3$ (36) = H$: P0$ (39) = R1$: P0KE 53251
.80: P0KE 53248, 120: P0KE 559, 46
1350 P0KE 707, 255: F0R T=0 T0 400: NEXT
05
KI
      T:TMR=0
      1355 IF TMR<60 THEN POSITION 0,11:? #6
      ;"YOU HAVE EARNED "
1360 IF TMR>60 AND TMR<120 THEN POSITI
UN 0,11:? #6;"YOUR FREEDOM "
MO
      1365 IF TMR>120 AND TMR<200 THEN POSIT
ION 0,11:? #6;"個問題回過過過過
     10N 0,11:? #6;"IRMMODITION "
1370 IF TMR>200 AND TMR<250 THEN POSIT ION 0,11:? #6;"I WAS INNOCENT "
1375 IF TMR>250 AND TMR<280 THEN POSIT ION 0,11:? #6;"TO BEGIN WITH "
1380 IF TMR>280 THEN POSITION 0,11:? #6;"HA HA HA HA"
1385 TMR=TMR+1:POKE 707,248+4*(RND 0)*
1):IF TMR<310 THEN 1355
1390 GOTO 1260
5500 POKE 559,0:DIM F$(1),F2$((INT (ADR (F$)/1024)+1)*1024-ADR (F$)-1),PM$(384)
,M$(128)
5F
IL
       M$ (128)
      5505 DIM P0$(128),P1$(128),P2$(128),P3
       $ (128)
```

DO	5520 DIM L1\$(18),L2\$(18),R1\$(18),R2\$(1	RU
ZW	8 > , B L \$ (12 > , B R \$ (12 > , H \$ (10 > )   5538   L 1 \$ = "	RP
HF CE	5540   L2\$="哪回图图DOWN@BD>7cc间间隙"   5545   R1\$="哪P8xp型6N<2U <page00第"< td=""><td>WF X O</td></page00第"<>	WF X O
CK	5550 R2\$="图P8xP門>U图图: ID图图图图图"	
GG	5560 BR\$="團團《例知公司》(團團"	FT
MZ	5565	L
	POKE 711,146:POKE 53248,120	TU
GN	8005	UK GX
CR	8015 ? #6;"#	รล
FX	8025 ? #6;"### [1";	
IK	8030	EU
58	R1\$:50UND 0,121,10,4:50UND 1,162,10,4	LI 84
	8040	
FX	8045 FOR T=128 TO 140 STEP 0.5:POKE 70	110
FF	8050 FOR T=252 TO 255 STEP 0.5:POKE 70	RD
บผ	7,T:50UND 3,T,6,T-252:NEXT T 8055 FOR T=4 TO 0 STEP -0.3:50UND 0,18	РΥ
	2.10,T:50UND 1,144,10,T:50UND 2,64,12,	ТН
UG	8060 NEXT T:50UND 3,0,0,0:TMR=0	VB
TC	8065 POKE 707,248+6*(CRND(0)*2))1):TMR =TMR+1	MY
ID	8070 IF TMR>210 THEN POSITION 0,11:? #	KB PU
BR	8075 IF TMR>60 AND TMR<90 THEN POSITIO	
Y5	N 0,11:? #6;"GUILTY AS CHARGED" 8080 IF TMR>90 AND TMR<120 THEN POSITI	LW
	ON 0,11:? #6;"BMEMEMEMEMENDOGENE"	BQ
V5	8085 IF TMR>120 AND TMR<160 THEN POSIT   ION 0,11:? #6;" GUILTY "	YC
UE	8090 IF TMR>160 THEN POSITION 0,11:? # 6;"TO THE DOOM CHAMBER"	DM
UT	8092 IF PEEK(644)=0 THEN TMR=210	BK
X H A D	8095 GOTO 8065   8100 FOR T=140 TO 128 STEP -0.3:POKE 7	HH
	04.T:SOUND 3.T.6.T-128:NEXT T:POKE 704	
DU	8110 POKE 707,248+6*((RND(0)*2))1:IF	CM
UL	PEEK	uu
нт	LUL=1:P0\$(Y1)=L2\$	AR
	1,0:POKE 53248,0:POSITION 0,0	PU
LI	8125 ? #6;"	AL
YX	8135 ? #6; "% #";	าก
SM ZA	8145 ? #6;"[ #";	UU
VF	8150 ? #6;"	ZG
YZ	8155 COLOR 192:PLOT 9,11:DRAWTO 19,11:	
GU	FOR T=4 TO 1 STEP -1:COLOR 32 8160 PLOT 0.T:FOR I=15 TO 6 STEP -0.5:	0E
ÐН	50UND 0,237,10,1:50UND 1,192,12,1   8165 NEXT 1:NEXT T:FOR X1=48 TO 64 STE	
	P 0.5:50UND 2,X1,10,2:POKE 53248,X1	CF
ZI	8170 NEXT X1:FOR T=1 TO 4:COLOR 5:PLOT 0.T:FOR I=6 TO 0 STEP -0.3	
OM	8175 SOUND 0,237,10,1:SOUND 1,192,12,1 !NEXT I:NEXT T:SOUND 2,0,0,0	VH
HX	8180 POKE 711,32:GOTO 1000	i
BY	10000 RESTORE 11100:READ DNUM 10010 D=PEEK(560)+256*PEEK(561)	PE
οŪ	10020 FOR I=1 TO DNUM:READ B:POKE D+B, PEEK(D+B)+128:NEXT I	66
AH	10030 B=INT (ADR (DLI\$) / 256) : A=ADR (DLI\$)	55
TU	-B*256:POKE 512,A:PDKE 513,B   10040	EH
ĹĬ	11000 DIM DLIS (55): DLIS = "HEMBERGENDED ND> BUBLENBEND : BUBLEDBENBENDES"	,
JŁ	11010 DLI\$(41)="10四篇	нр
CD	N 11100 DATA 3,10,11,12	
CA	20000 POKE 559,0:CHR=38912:I=256*224:P	GR
KC	20005 DIM C\$ (126)	
Y5		ΧÜ
YA	16/7" 20007 C\$ <64,126>="ZND@ < < DDB CNDD@ RIDER	En
1 84		EB

```
20015 I=USR (MOV, 57344, 38912, 1024)
20020 FOR X=1 TO LEN(C$> STEP 9
20030 OFFSET=ASC (C$(X,X))
20035 Z=USR (MOV, ADR (C$(X+1)), CHR+OFFSE
        T*8,8>:NEXT
        20040 Z=7:RETURN
      ISTING 2
       10 REM DOOMED, LISTING 2
20 REM BY TONY BARNES
       10
       30 REM (c) 1985,1989 ANTIC PUBLISHING 35 REM (CREATES LINES 50, 5530-5565, 1 1000-11010 AND 20006-20010 FOR DOOMED.
       BASE
       BAS)
40 REM (LINES 10-250 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
50 REM CHANGE LINE 70 AS NECESSARY.>
60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
EEK(10592):POKE 10592,255
70 FN$="D:LINES.LST":REM THIS IS THE N
AME OF THE DISK FILE TO BE CREATED
BU ? "MOISK OF Massette?";:POKE 764,25
       90 IF
                        NOT
       90 IF NOT (PEEK(764)=18 OR PEEK(764)=
58) THEN 90
100 IF PEEK(764)=18 THEN FN$="C:"
110 POKE 764,255:GRAPHICS 0:? " AN
TIC'S GENERIC BASIC LOADER"
120 ? ,"BY CHARLES JACKSON"
130 POKE 10592,DPL:TRAP 200
140 ? :? :? "Creating ";FN$:? "...plea
5E Stand by."
                                  (PEEK(764)=18 OR PEEK(764)=
       150 RESTORE : READ LN:LM=LN:DIM A$ (LN):
       C = 1
       160 ARS="": READ ARS
                FOR X=1 TO LENCARS> STEP 3:POKE 75
       170
       2,255
180 LM=LM-1:POSITION 10,10:? "Countdo wn...T-";INT(LM/10);") "
190 A$(C,C)=CHR$(VAL(AR$(X,X+2)):C=C+
1:NEXT X:GOTO 160
200 IF PEEK(195)=5 THEN ? :? "? "GTOO MANY DATA LINES!":? "CANNOT CREATE FILE
       E!":END
210 IF C<LN+1 THEN ? :? "GTOO FEW DATA
LINES!":? "CANNOT CREATE FILE!":END
220 IF FN$="C:" THEN ? :? " Prepare ca
       Ssette, Press (RETURN)"
230 OPEN #1,8,0,FN$
240 PUKE 766,1:? #1,8$;:POKE 766,0
       250 CLOSE #1:GRAPHICS 0:? "MODERMANICALE
       1000 DATA 582
1010 DATA 0530480320660820750610850830
       82040065068082040034104169000133077104
104201000240007169112133016
                              1410142100960340410440490410
       58082069084085082078032155053053051048
       032076049036061034000014028
1030 DATA 0300140481081140600761120600
14246230012012000034155053053052048032
       076050036061034000014028030
       070050036061034000014028030

1040 DATA 0140481241102222222200620550

99099195195000034155053053052053032082

049036061034000112056120112

1050 DATA 0120540780600500140601121111

030480480400034155053053053048032082050

036061034000112056120112012
       1060 DATA 0621181231230591242361981981
95195000034155053053053053032066076036
       061034000000060126221201255
1070 DATA 2551260600000000341550530530
54048032066082036061034000000060126187
       1472552551260600000000034155
       1080 DATA 0530530540530320720360610340
00060126251252255127063031000034058082
069084085082078032155049049
       1090 DATA 0480480480320680730770320680
76073036040053053041058068076073036061
       034072173000001238000001141
1100 DATA 0102122010002080071690411410
       22208104064201001208007169039141022208
104064169000141000001169190
       1110 DATA 141034155049049048049048032068076073036040052049041061034022208173
       020000141024208169032141026
       1120 DATA 208104064034058082069084085082078032155050048048048054032067036040049044054051041061034001251
IX 1130 DATA 2551912552512552232540021291
```

HTTENELITEEPHEEFERSETS

UD 1170 DATA 1230540130002481101951030511 23222032000032048056060056048032034155 050048048049048032077079086 1180 DATA 0610650680820400341041041332 41104133240104133213104133212104133239 104133238160000177240145212 https://doi.org/10.1001

Customizing your Atari

### **Operating System Device Handlers**

Article on page 9

```
UU 100 REM NULL HANDLER INSTALLATION
CE 110 REM BY BOB MARTIN
UI 120 REM CC>1989, ANTIC PUBLISHING INC.
XG 150 RESTORE :TRAP 170:ADDR=1536
YU 160 READ A:POKE ADDR,A:ADDR=ADDR+1:GOT
U 160
BZ 170 TRAP 180:XXX=USR(1536)
HI 180 ? :? "N: HANDLER INSTALLED!":END
KH 190 DATA 104,162,0,189,26
HU 200 DATA 3,240,7,232,232,232,208,246,2
40,242
XH 210 DATA 169,78,157,26,3,169,31,157,27
```

LISTING 1

73 220 DATA 169.6.157.28.3.96.43.6.43.6 AP 230 DATA 43.6.43.6.43.6.76.44.6.169 FJ 240 DATA 1.168.96.226.2.227.2.0.6

### LISTING 2

```
0100 ;
        ADD A NULL HANDLER
        BY BOB MARTIN
0110
         (c) 1989, ANTIC PUBLISHING INC.
0120
0130
0140 HATABS = $031A
0150
0160
0170
     INSERT THE N: DEVICE IN HATABS
LOOK FOR EMPTY SPOT IN HATABS
0180
0200
9219
0220 INSERT
0240 NEXTPLACE
           LDA HATABS,X
BEQ ESPOT
0250
0260
           INX
9289
           INX
0290
               NEXTPLACE
0300
           BNE
           BEQ INSERT
0310
         FOUND AN EMPYT SPOT
0330
0340
0350 ESPOT
          LDA #'N
STA HATABS,X
0360
           LDA #NULLT&SFF
0380
           STA HATABS+1,X
LDA #NULLT/$0100
0390
0400
           STA
               HATAB5+2,X
0410
0420
0430
     HANDLER TABLE
9440
0450
0460 NULLT
           . WORD NULL-1
. WORD NULL-1
0470
0480
           · WORD NULL-1
9499
0500
           . WORD NULL-1
           . WORD NULL-1
0510
           JMP NULL
0520
0530
0540 ; NULL HANDLER
9559
8568 NULL
           LDA #1
```

```
0590 RT5

0600;

0610; RUN INITIALIZATION STEP

0620;

0630 *= $02E2

.WORD INSERT

.END
```

### LISTING 3

```
REM MODIFIED PRINTER HANDLER
JH | 10
    10 REM MUDIFIED PRINTER HANDLER
20 REM BOB MARTIN & MARTIN MERCORELLI
30 REM (c)1989, ANTIC PUBLISHING INC.
35 DIM A$(20),PRG$(400),FN$(20)
40 GRAPHICS 0:?:?" What type of
rinter":?:?:?,"1 - Epson":?,"2
- C. Itoh ProWriter"
50 ?,"3 - Other":?:INPUT PR:C=0
TT
AD
UZ
JI
     60 UPSIDE=0
         IF PR=3 THEN GOSUB 2000
POKE 752,1:? "M
RA
     100 READ B:C=C+1:IF B<>-1 THEN PRG$ <C.
95
    100 REHD B:C=CT1:IF BS/21 III.C CS-CHR$ (B): GOTO 100 200 DATA 255,255,0.6,90.6,0.0,0.0 210 DATA 0,0,0,0,0,0,0,0,0,0,0 220 DATA 0,0,76,16,6,162,0,189,26,3 230 DATA 201,80,240,5,232,232,232,208,
JH
     244,189
          DATA 27.3,133,205,189,28,3,133,206
     240
     ,169
250
260
           DATA 0,157,27,3,169,6,157,28,3,160
DATA 15,177,205,153,0,6,136,16,248
LE
     270
           DATA 173,6,6,105,1,141,17,6,173,7
DATA 6,105,0,141,18,6,169,43,141,
MIL
    280
    290 DATA 6,169,6,141,7,6,96,226,2,227
300 DATA 2,19,6,19,6,229,6,173,186,6
310 DATA 172,187,6,174,188,6,32,16,6,1
ER
SC
    320 DATA 48,7,142,189,6,140,190,6,96,1
TE
     04
    330 DATA 104,96,141,186,6,140,187,6,14
     2,188
     340 DATA 6,174,255,6,240,21,174,254,6,
     208
     350 DATA 4,201,155,240,12,201,96,240,1
NE
     2.201
     360 DATA 32,144,8,201,123,176,4,32,19,
HU
     370 DATA 96,162,0,142,185,6,189,225,6,
HIL
     380 DATA 22,6,174,185,6,232,236,229,6,
     390 DATA 238,173,186,6,32,165,6,133,20
       ,169
ΧU
    400 DATA 0,133,205,133,206,162,2,24,38
      204
ИΒ
     410 DATA 38,205,202,16,248,24,169,224,
     101,205
420 DATA 133,205,162,128,142,185,6,32,
SF
     430 DATA 32,22,6,169,0,133,206,78,185,
HN
     440 DATA 174,185,6,208,238,174,189,6,1
```

continued on next page

TAY

```
0450 ; MOVE P: HANDLER TABLE TO NEW 0460 ; LOCATION
JT | 450 DATA 6,152,96,41,127,201,96,176,13
                                                                               0480 PFND
     469
           DATA 32.144.6.56.233.32.56.176.3.2
                                                                                                     HATABS+1,X
     470 DATA 105.64,96,0,0,0,0,0,0,169
480 DATA 1,133,203,160,7,138,49,204,24
                                                                                               STA
                                                                                                       ZPAGE1
                                                                               0500
                                                                                               LDA
                                                                                                     HATABS+2,X
FD
                                                                               9519
                                                                                               STA ZPAGE1+1
LDA #NPTBL&$FF
     0,6
                                                                               9529
           DATA 165,203,5,206,133,206,6,203,1
                                                                               9539
                                                                                               STA HATABS+1,X
                                                                               0540
     36,16
    36.16

500 DATA 240,165,206,44,186,6,16,4,73,

255,133,206,96

510 DATA 27,76,8,0,4,-1

1000 IF PR<>2 THEN 1100:REM C.ITOH

1010 PRG$<106,106>=CHR$<231>:PRG$<188,

188)=CHR$<231>
                                                                                                LDA #NPTBL/$0100
HC
                                                                               0550
                                                                                               STA HATABS+2,X
LDY #15
                                                                               0560
                                                                               0570
                                                                               0580 PMULP
                                                                                               LDA
                                                                                                       (ZPAGE1),Y
RU
                                                                               9599
                                                                                               STA NPTBL, Y
                                                                               0600
     1020 PRG$ (281, 281) = CHR$ (128) : PRG$ (297,
                                                                               0610
                                                                                               BPL PMVLP
     297>=CHR$ (70)
                                                                               0620
     1030 PRG$ (315,319) = "50008" : PRG$ (320,32
MU
                                                                               0630
                                                                                       STORE OLD PUT BYTE ADDRESS THEN CHANGE PUT BYTE ADDRESS TO POINT TO MODIFIED PUT BYTE
     0) = EHR$ (6)
                                                                               9649
     1100 IF PR<>3 THEN 1200:REM OTHER
1110 PRG$(106,106)=CHR$(NUMCOD):PRG$(1
                                                                               0650
                                                                               0660
    1110 PRG$<106,106)=CHR$(NUMCOD):PRG$(1
88,188)=CHR$(NUMCOD)
1120 IF UPSIDE THEN PRG$(281,281)=CHR$
(128):PRG$(297,297)=CHR$(70)
1130 PRG$(314,313+COUNT)=A$
1200 FN$="D:EPSON.EXE":IF PR=2 THEN FN
$="D:CITOH.EXE"
1210 IF PR=3 THEN FN$="D:OTHER.EXE"
1220 ? "N":? :? :? " Creating ";FN$
1230 CLOSE #1:OPEN #1,8,0,FN$:? #1;PRG
6::CLOSE #1:OPEF 752.0
                                                                                            ROUTINE
                                                                               9679
                                                                                               CLC
TG
                                                                               9699
                                                                                                LDA NPTBLPC
                                                                               0700
DM
                                                                                                ADC
                                                                                                STA OLDPNT+1
                                                                                0720
                                                                                                LDA NPTBLPC+1
                                                                               9739
                                                                                9749
                                                                                                ADC
                                                                                                      ## Ø
                                                                               0750
                                                                                                STA OLDPNT+2
HT
                                                                                                LDA #INPUTCH-13&$FF
                                                                                0760
    1230 CLOSE #1:0PEN #1,8,0,FN$:? #1;PRG

$;:CLOSE #1:POKE 752,0

1240 ? :? :? ," DONE!"

1250 IF PR<>3 THEN 1500

1260 ? :? " NOTE: If this handler pr

ints Larry upside down,"

1270 ? "change line 60 to:":?

1280 ? ,"60 UPSIDE=1":?

1290 ? " Then RUN this program again."
                                                                                0770
                                                                                                STA NPTBLPC
                                                                               0780
0790
                                                                                                LDA # ENPUTCH-11/$0100
IA
                                                                                                STA
                                                                                                      NPTBLPC+1
                                                                                0800
                                                                                0810
                                                                                        ;
                                                                                0820
                                                                                                * -
                                                                                                       $02E2
                                                                                                . WORD INSERT
RE
                                                                                0830
A.F
                                                                                0850
                                                                                0860
                                                                                        ; MODIFIED PRINTER HANDLER
    "
1500 END
2000 ? "M":? :? :? " Type in the co
des to put":? "YOUR printer into graph
ics mode"
2010 ? :? " CYou can find this inform
ation":? "in your printer manual)"
2020 ? :? " Type in the decimal codes
one at a time. End with -1":POKE 75
                                                                                0870
                                                                                        INTERCEPTS THE PRINTER HANDLER
AND SENDS UNPRINTABLE
CHARACTERS AS DOT GRAPHICS
OTHER CHARACTERS ARE SENT AS
                                                                                0880
                                                                                0890
                                                                                0900
                                                                                0910
OZ
                                                                                0920
                                                                                            NORMAL MODE CHARACTERS
                                                                                0940
                                                                                            OKE 1791 ($6FF) WITH A "O"
TO ENABLE. ANY OTHER VALUE
WILL DISABLE THIS OPTION.
                                                                                0950
                                                                               0960
                                                                                        3
     2030 ? :? "EXAMPLE:":? :? "?27":? "?76
MK
                                                                                0980
     ress the SPACEBAR to begin";
2040 POKE 764,255
2050 IF PEEK(764) <>33 THEN 2050
2060 POKE 764,255:POKE 752,0:COUNT=0:?
                                                                                0990
                                                                                                *= INSERT
GF
                                                                                1000
                                                                                        JUMP TO OLD PRINTER PUT BYTE
AX
                                                                                1010
                                                                                1020
                                                                                       PNTPUT
                                                                                1030
     2070 INPUT Q:IF Q<0 THEN 2090
2080 COUNT=COUNT+1:A$ (COUNT, COUNT)=CHR
                                                                                                LDA HA
                                                                                1040
                                                                                        PNTPIIT2
                                                                                1050
$ (Q) : GOTO 2070
ZR 2090 NUMCOD=224+COUNT
AC 2100 RETURN
                                                                                                LDY HY
                                                                                1060
                                                                                                LDX HX
                                                                                                JSR OLDPNT
                                                                                1080
                                                                                                TYA
                                                                                1090
LISTING 4
                                                                                1100
                                                                                                BMI ERROR
                                                                               1110
1120
                                                                                                STX
0100 ; MODIFIED PRINTER HANDLER
0102; BY BOB MARTIN
0104; C>1989, ANTIC PUBLISHING
0110; INITIALIZATION ROUTINE FOR
                                                                                1130
                                                                                                RTS
                                                                                1140 ERROR
                                                                                1150
                                                                                                PLA
0120; SPECIAL PRINTER HANDLER
0140 HATABS = $031A
0150 ZPAGE1 = $CD
                                                                               1160
1170
                                                                                                PLA
                                                                                                RT5
                                                                                1180
                                                                                1190
                                                                                         MODIFIED PRINTER PUT BYTE
 0160 ;
                                                                                1210 NPUTCH
 0170
                       $0600
                                                                                                STA HA
                                                                                               STY HY
STX HX
STX HX
ONTOK
 0190 ; PRINTER HANDLER TABLE
                                                                                                                      CK FOR
                                                                                1220
0210 NPTBL
9220 - WORD 0,0,0
                                                                                                                      UNPRINTABLE
                                                                                1239
                                                                                                                      CHARACTERS
                                                                                1249
 0230 NPTBLPC
                                                                                1250
0240 .WORD 0,0,0,0,0
0260 ;OLD PRINTER PUT BYTE
0280 OLDPNT
                                                                                1260
                                                                                1279
                                                                                                LDX $06FE
BNE CRGR
                                                                                1280
 0290
                JMP OLDPNT
                                                                                1290
                                                                                                CMP
 0300
                                                                                1300
                                                                                                BEQ PNTOK
         ; INITIALIZE NEW PRINTER HANDLER
 9329
                                                                                1310
                                                                                        CRGR
                                                                                                      #96
                                                                                                CMP
 0340 INSERT
                                                                                1315
                LDX #0
                                     :FIND P: HANDLER
                                                                                1320
                                                                                                BEQ NOPHT
 0350
        PLOOP
                                                                                                CMP
 0360
                 LDA HATABS, X
                                                                                                BCC NOPNT
 0370
                                                                                1340
                                                                                                CMP
                      22 ' F
9389
                 CMP
                                                                                1350
                                                                                                      #123
 0390
                 BEQ PEND
                                                                                1360
                                                                                                BCS NOPNT
                                                                                        PNTOK
                                                                                1370
                 INX
                                                                                                JSR PNTPUT
 9410
                 INX
                                                                                1380
0420
                 TNY
                                                                                1390
                                                                                                RT5
                 BNE PLOOP
                                                                                1499
0440 ;
                                                                                1410
                                                                                        ; HANDLER FOR UNPRINTABLE
```

```
2030
                                                                              CLC
1420 : CHARACTERS
                                                                              ADC #64
                                                                  2040
1430
                                                                  2050 007
1440 NOPHT
                                                                              RTS
                                                                  2060
            LDX #0
1450
                                                                 2070 HBIT
2075
      GRLOOP
1460
                                                                              . BYTE 0
1470
                                                                  2080
                                                                              BYTE
                  GRCODE, X
1480
            LDA
                                                                              BYTE
                                                                  2090
1490
            JSR PNTPHT2
                                                                  2100
                                                                        HX
                                                                              .BYTE
                                                                                      Ñ
            LDX HBIT
1500
                                                                  2110
                                                                        RX
1510
            INX
            CPX CODELN
BCC GRLOOP
                                                                  2120
                                                                              BYTE
                                                                         RY
                                                                  2130
1530
                                                                  2140
                                                                         CALCULATES THE VERTICAL-BYTE
1550
1560
            LDA HA ;GET INTERNAL
JSR ASC2SCN ;CODE # AND
STA $CC ;CALC ADDR
LDA #0 ;OF FONT
                                                                  2150
                                                                         ; FROM THE CHARACTER FONT
                                                                 2160
2170
2180
1570
                                                                         ADDRESS OF CHARACTER IN SCC & ZPAGE1
            LDA #0
STA ZPA
1590
                 ZPAGE1
                                                                  2190
1600
                                                                        BIT TO BE SENT TO PRINTER IN X REGISTER
1610
            STA ZPAGE1+1
                                                                  2200
                                                                  2210
1620
            LDX #2
1630 ALOOP
            CLC
ROL SCC
                                                                        RESULTING "SLICED" BYTE IS RETURNED IN A AND HELD IN
                                                                  2230
1635
                                                                  2240
1640
            ROL ZPAGE1
1650
                                                                  2260
1660
            DEX
            BPL
                                                                  2270
2280
1670
                                                                              LDA #$01
STA $CB
LDY #$07
                                                                                               C. ITOH LDA #$80
            LDA #SE0
1690
            ADC ZPAGE1
STA ZPAGE1
                                                                  2300
                                                                        1.00P
                                                                  2310
1710
                                                                              TXA
                                                                  2320
1730 ;
            LDX #$80
STX HBIT
                             CALC THE 8
                                                                  2330
                                                                              AND (SCC), Y
BEO NOTSET
1740
1750
                             BYTES
1760 BLOOP
                                                                  2350
                                                                              LDA
                                                                                    $CB
                                                                  2360 ORA ZPAGE1+1
2370 STA ZPAGE1+1
2380 NOTSET
                  SLICE
            JSR PNTPUT2
1780
1799
            LDA #0
            STA ZPAGE1+1
                                                                              ASL SCB
                                                                                               C.ITOH LSR $CB
1800
            LSR HBIT
                                                                  2400
                                                                              DEY
1810
                                                                              BPL LOOP
LDA ZPAGE1+1
BIT HA
BPL NOTINV
            LDX HBIT
                                                                  2410
            BNE BLOOP
LDX RX
LDY RY
                                                                  2420
1830
                                                                                              CK FOR INVID
                                                                  2430
1840
1850
1860
                                                                  2450
                                                                              EOR #$FF
                                                                              STA ZPAGE1+1
                                                                  2460 ST
2470 NOTINU
1870
            RTS
1888
      CONVERT ASCII TO DISPLAY MEMORY VALUE
                                                                  2480
                                                                              RT5
1890
                                                                  2490
1900
                                                                        ;PUT THE CONTROL CODE TO CAUSE
; YOUR PRINTER TO ACCEPT 8
; DOT GRAPHICS BYTES HERE
1910
                                                                  2500
1920
                                                                  2510
2520
            AND #$7F
1930
1940
                                                                  2530
                                                                         C.ITOH CONTROL CODE GROODE BYTE 27,"50008"
            BCS OUT
                                                                  2540
1950
1960
            CMP #32
                                                                  255A
            BCC
1970
                 GRCHR
                                                                  2560
                                                                        GRCODE .BYTE 27,76,8,0
                                                                  2570
1988
            SEC
1990
            SBC
                                                                        CODELN . BYTE CODELN-GRCODE
                                                                  2590
2000
                                                                  2699
2010
            BCS
                 OUT
2020 GRCHR
                                                                  2510
                                                                              . END
```

Total control over your settings

### **AUTORUN Selector**

Article on page 7

### LISTING 1

Don't type the TYPO II Codes!

```
UN 10 REM AUTORUN SELECTOR
XM 20 REM BY JASON STRAUTMAN/C. JACKSON
AD 30 REM (c)1989, ANTIC PUBLISHING INC.
TP 40 DIM A$<37)
UX 50 ? "MUNChecking Data...":TRAP 130
YN 60 FOR I=1 TO 37:READ BYTE:TOTAL=TOTAL
+BYTE*I:A$<I,I)=CHR$<BYTE>:NEXT I
PP 70 IF TOTAL<>54579 THEN POKE 195,0:GOT
0 130
SU 80 TRAP 90
CJ 90 ? "MCreating...SELECT.EXE":CLOSE #1
:OPEN #1,8,0,"D:SELECT.EXE":? #1;A$;
HX 100 CLOSE #1:END
UR 110 DATA 255,255,0,128,24,128,165,10,1
41,21,128,165,11,141,22,128,173,31,208
.41
BU 120 DATA 2,208,3,108,21,128,96,0,0,0
```

```
FI 130 IF PEEK(195)=0 THEN ? "There is an error in the data!!":END

DH 140 IF PEEK(195)=6 THEN ? "Missing Data!!":END

PU 150 ? "Error ";PEEK(195)
```

### LISTING 2

continued on next page

0180	STA VECTOR ;DOS vector	0250 CONT RTS	Load AUTORUN
8190	LDA DOSVEC+1	0260 VECTOR	
0200	STA VECTOR+1	0270 .WORD 0,0	
0210	LDA CONSOL ; CONSOL Key	0280 ×= \$02E2	
0220	AND #\$02 ; Is it SELECT?	0290 .WORD START	
0230	BNE CONT	0300 .END	
9249	JMP (VECTOR) ; Load DUP.SYS		

Fast multi-file text finder

### Locator

### LISTING 1

Don't type the TYPO II Codes!

BZI 10 REM LOCATOR 20 REM JEFFREY A. SUMMERS, MD 30 REM (C) 1989, ANTIC PUBLISHING INC. 100 DIM FN\$(20),FN1\$(20),MASK\$(20),SEA JR OB RCH\$(50), WINSTR\$(143), CASE\$(1), BUFR\$(1 (0000 109 GOSUB 10000:FOUND=0 110 CLOSE #1:OPEN #1,12,0,"E:":POKE 71 RO 0,18 EM 120 DLIST=PEEK (560) +256\*PEEK (561) : POKE W5 MA 160 IF MASK\$="" THEN MASK\$="U.Z.S 165 PTR=USR (ADR (WINSTR\$), ADR (MASK\$), LE RW UA 103 FTR-USR (MURINSTREAD ROUNDSTREAD ROUND AT FS 10,18 10,18
210 CLOSE #2:OPEN #2,7,0,MASK\$
220 TRAP 600:FOR I=1 TO FPTR:INPUT #2,
FN\$:NEXT I:FN1\$=MASK\$(1,PTR):FN1\$(PTR+
1)=FN\$(3,10):FPTR=FPTR+1:CLOSE #2
230 FOR I=LEN(FN1\$) TO 1 STEP -1:IF FN
1\$(I,I)<>" " THEN POP :GOTO 240 BU KE 235 NEXT FN1\$(I+1)=".":FN1\$(I+2)=FN\$(11,13) SE 240 CLOSE #3:OPEN #3,4,0,FN1\$
? "CHECKING ";FN1\$
FLEN=USR(INP,3,BUFR,10000)
IF CASE\$<>"Y" THEN D=USR(MAKEUP,BU 250 RR 260 PO 300 CD 310 FR, FLEN 320 P=USR (WINSTR, BUFR, FLEN, SEARCH, SLEN CT 330 IF P<>0 THEN 400 340 IF FLEN<>10000 THEN 500 350 BUFR\*(1)=BUFR\*(9900):BUFR\*(10000)= DR MP FLEN=USR (INP, 3, BUFR+100, 9900) +100 360 NB 370 GOTO 310 370 GOTO 310
400 BEGIN=P-18:IF BEGIN<1 THEN BEGIN=1
410 ENN=P+19:IF ENN>FLEN THEN ENN=FLEN
415 ? "Found in file ";FN1\$;" ":
FOR I=BEGIN TO ENN:? CHR\$(27);BUFR\$(I, I);:NEXT I:FOUND=1
420 POKE 752,1:?:? "@lext file [4xit [40] ntinue":POKE 752,0
430 CLOSE #5:OPEN #5,4,0,"K:":GET #5,X
:CLOSE #5:IF X=78 THEN 500
440 TE Y=69 THEN 500 50 XC ши ZN UT \*:CLOSE #5:IF X=78 THE 440 IF X=69 THEN 600 450 IF X<>67 THEN 430 PR P=USR (WINSTR, BUFR, FLEN, SEARCH, SLEN 5X 460 P+1) 470 GOTO 330 500 CLOSE #3:GOTO 210 600 IF NOT FOUND THEN ? :? "Not Found U A ? "Done.":END 0\_? :? "Illegal directory name":GOT 610 UW 1000 0 2000 2000 FOR I=1 TO 700:NEXT I:CLOSE #1:CL 05E #2:G0T0 110

FK 10000 INP-ADR ("hhhmmmmmmehmeehmeehme

TH -Zuebjazuebje vi" 10020 HINSTRS (72,143) = "GOND MDDDDDB8AV DHZHANGOZDE: RODZO: \*OURGEODDZBGROND\*OU 10030 MAKEUP = ADR ("hhadhadhaddhaddheum adhadhai madan i adhada. amanan maran a maran an mar ZUenjy zama sezne i Canzu i Saucychznekka) 8月 日日田田田 118 DN 10040 RETURN LISTING 2 10 REM LOCATOR, LISTING 2
20 REM JEFFREY A. SUMMERS, MD
30 REM (C) 1985,1988 ANTIC PUBLISHING
35 REM (CREATES LINES 10000-10030 FOR
LISTING 1, LOCATE.BAS)
40 REM (LINES 10-250 MAY BE USED WITH
OTHER BASIC LUADERS IN THIS ISSUE.
50 REM CHANGE LINE 70 AS NECESSARY.)
60 DIM FN\$(20),TEMP\$(20),AR\$(93):DPL=P
EEK(10592):POKE 10592,255
70 FN\$="D:LINES.LST":REM THIS IS THE N
AME OF THE DISK FILE TO BE CREATED
B0 ? "MDISK OF Massette?";:POKE 764,25 RY | 10 JR GD SK EU PR 1111 RD 90 IF NOT (PEEK(764)=18 OR PEEK( 58) THEN 90 100 IF PEEK(764)=18 THEN FN\$="C:" PY NOT CPEEK (764) = 18 OR PEEK (764) = 110 POKE 764,255:GRAPHICS 0:? "AN TIC'S GENERIC BASIC LOADER"
120 ?,"BY CHARLES JACKSON"
130 POKE 10592,DPL:TRAP 200
140 ?:?:? "Creating ";FN\$:? "...plea UΒ KB PU by . " stand 58 150 RESTORE : READ LN:LM=LN:DIM AS(LN): 160 ARS="":READ ARS 170 FOR X=1 TO LENCARS> STEP 3:POKE 75 RO Y C 2,255 180 LM=LM-1:POSITION 10,10:? "(Countdo Wn...T-";INT (LM/10);")

190 A\$(C,C)=CHR\$(VAL(AR\$(X,X+2))):C=C+

1:NEXT X:GOTO 160

200 IF PEEK(195)=5 THEN ? :? :? "GTOO
MANY DATA LINES!":? "CANNOT CREATE FIL ! " : END 210 IF C<LN+1 THEN ? :? "GTOO FEW DATA LINES!":? "CANNOT CREATE FILE!":END 220 IF FN\$="C:" THEN ? :? " Prepare ca HA 220 IF FNS="C:" IHEN ?:?" Prepare Ca Ssette, press [RETURN]" 230 OPEN #1,8,0,FN\$ 240 POKE 766,1:? #1;A\$;:POKE 766,0 250 CLOSE #1:GRAPHICS 0:? "#@@@@@@@@@ PU AL. 1000 DATA 339 1010 DATA 0490480480480480320730780800 1010 DATA 0490480480480480320730780800 610650680820400341041041104010010010010 1 170169007157066003104157069 1020 DATA 0031041570680031041570730031 04157072003032086228189072003133212189 073003133213096034041155049 1030 DATA 0480480490480320870730780830 84082036040049044055049041061034104104 133215104133214104133225104 05 FP 1040 DATA 1332241041332171041332161041

04133226104133231104133230056165230233 001133230165231233000133231

QT 1050 DATA 0241652301012141332321652311

JP

012151332330241652141012241333228165215 101225133229160000177034155 1060 DATA 0490480480500480320870730780 83084082036040055050044049052051041061 034232209216208032200196226 1070 DATA 2082451652320562292141332121 65233229215133213165212024105001133212 165213105000133213096165232 1080 DATA 1972282080131652331972292080 1080 DATA 07169000133212133213096165232024105001

133232165233105000133233024 1090 DATA 1441810341550490480480510480 32077065075069085080061065068082040034 104104133213104133212104133

1100 DATA 2151041332141652120241012141 33216165213101215133217160000177212201 097016024165212024105001133 DE

1110 DATA 2121252131050001332131972172 08233165212197216208227096056233032145 212024144224034041155

#### Print Shop Graphics that move

## **Icon Animation System**

Article on page 15

#### LISTING 1

Don't type the

LZ 100 REM ICON ANIMATION SYSTEM, 100 REM ICON ANIMATION SYSTEM, LISTING 1, THE ANIMATOR 103 REM BY JIM JOHNSON 106 REM (c) 1989 ANTIC PUBLISHING INC. 110 C0=0:C1=1:C2=2:C3=3:C4=4:C5=5:C6=6 :C7=7:C8=8:C9=9:C20=20:MAX=C20+C5 BO 103 106 110 120 MUDE=C6:OFF=40000:WAIT=10 130 DIM FILENAME\$(20),KEY\$(C3) 140 DIM B\$(128),G\$(616),G2\$(616\*MAX) 150 DIM SEQ\$(101),SCRIPT\$(10\*10) 91 FIN SOZIM PKZOD PWEZKODAKSTI I CZZMOGAMSTI NJETO 180 B\$="₩":B\$ (128) =B\$:B\$ (C2) =B\$:BADR=A 190 G\$="\mathbf{M}":G\$ (616) = G\$:G\$ (C2) = G\$
200 IOCB = 832 + 16:ADRHI = INT (ADR (G2\$) / 256
):ADRLO = ADR (G2\$) - ADRHI × 256
260 GOSUB 31000:TRAP OFF:GOSUB 1630:PO
5ITION C2, C3
270 ? " GHA":? " (MII) CREATE ANTMATTA 2/U ? " GEEN":? "
N FILE":? " GEEN":? "
FILE":? " GEEN":? "
290 ? " GEEN":? " TO TO LOOD ONTMOTTON n n 290 ? " [HHb]":? " I I SAVE ANIMATION 300 ? .. GB6::? " m m SEQUENCER":? " UL 310 ? " 语用铜":? " :? " (哈巴)":? " 320 ? " (哈巴)":? " IN IN VIEW ANIMATION" Kn HO III III SCRIPTER":? " 330 G05UB 1680 340 OLDX=C5:OLDY=C4:CURX=OLDX:CURY=OLD MD X O 350 CLUSE #C1, KEY 360 IF KEY=45 AND CURY>C4 INC. RY-C3:G0T0 450 370 IF KEY=61 AND CURY<19 THEN CURY=CU 370 IF KEY=61 AND CURY<19 THEN 470 350 CLOSE #C1:OPEN #C1, C4, C0, "K:":GET MJ 380 IF KEY=155 AND CURY=C4 THEN 470 390 IF KEY=155 AND CURY=C7 THEN 1460 400 IF 5EQ\$="" THEN 440 410 IF KEY=155 AND CURY=10 THEN 1330 420 IF KEY=155 AND CURY=13 THEN 1170 THEN 1170 THEN 960

KEY=155 AND CURY=16

440 IF KEY=155 AND CURY=19 THEN TRAP 2
60:RUN "D:5CRIPTER.BAS"
450 POSITION OLDX,OLDY:? "";:POSITION
CURX,CURY:? """;:OLDX=CURX:OLDY=CURY

CURX,CURY:? "M";:OLDX=CURX:OLDY=CURY
460 GOTO 350
470 GOSUB 1630:GOSUB 1680:POKE 752,CO
480 ?:? "How many pictures do you w
ish to":? "load (maximum=";MAX;")";:
1NPUT KEY\$:IF KEY\$=""THEN 260
490 FRAMES=VAL(KEY\$):SEQ\$="":FOR I=C1
TO FRAMES:SEQ\$<II,I)=CHR\$<I>:NEXT I:IF
FRAMES>MAX THEN FRAMES=MAX
500 POKE 752,C1:POSITION C4,22:? "INSE
RT GRAPHICS DISK, PRESS (MAMINIM: CLOSE
#C1:OPEN #C1,C4,C0,"K:":GET #C1,KEY
510 X=USR<SRADR,BADR,361,C1,C3>:IF B\$<
C1,15>="PRINT SHOP:CLK!"THEN 530
POSITION C7,C8:? "\* (MOMINIMERICAL)
MEMBER MAN \*A";:FOR I=C1 TO 300:NEXT I:GO

■HOURTON \*5";:FOR I=C1 TO 300:NEXT I:GO

KU NI NEXT WК 5.0 ME 680 ZU 950 960 978 HIT KJ D O SK X D PO FR EМ JJ

TO 470 530 G85UB 1690 540 L=ADR (G\$):5CRMEM=PEEK(88)+PEEK(89) ¥ 7 ZJ \*256+C4+C4\*20 \*256+C4+C4\*20
560 REM LOAD ICONS
570 ICON=C0
580 FOR SECTR1=362 TO 393:X=USR(SRADR, BADR, SECTR1, C1, C3)
590 FOR I=C0 TO 96 STEP 32:REM If B\$(X+19, X+19)<\"X" And B\$(X+20, X+20)<\"x" Then Pop :Pop :Goto 570
600 ICON=ICON+C1
610 SECTR=ASC(B\$(I+17, I+17))+256\*ASC(B\$(I+18, I+18)) \$(1+18,1+18)) 620 FUR I2=C0 TO 378 STEP 126:X=USR(SR ADR, BADR, SECTR, C1, C3) 630 G\$(I2+C1, I2+126)=B\$(C1, 126):SECTR= ASC(B\$(127, 127))+256\*ASC(B\$(128, 128)): 12 640 X=USR (SRADR, BADR, SECTR, C1, C3): G\$ (5 05,572)=B\$(C1,68) 650 X=U5R(5RADR,BADR,5ECTR1,C1,C3) 660 X=U5R(PICT,5CRMEM,L,11,52,C20) 670 G2\$(C1+616\*(ICON-C1))=G\$ IF ICON=FRAMES THEN 970
NEXT I:NEXT SECTR1
REM DISPLAY IMAGES
GOSUB 1690
L=ADR (G\$):SCRMEM=PEEK (88) +PEEK (89) \*256+C4+C4\*20 980 FOR I=C1 990 IF A5C (5E) TO LENGSEQ\$> ASC (SEQ\$ (I,I))=CO THEN GOSUB 15 90:GOTO 1020 1000 L=ADR(G2\$)+616\*(ASC(SEQ\$(I,I))-C1 1010 X=USR (PICT, SCRMEM, L, 11, 52, C20)
1020 FOR DELAY=C1 TO WAIT:IF PEEK (764)
<>255 THEN GOSUB 1060
1025 NEXT DELAY:POKE 77, C0
1030 IF PEEK (764) <>255 THEN GOSUB 1060
1040 NEXT I
1058 POKE 764, 255: GOTO 980
1060 CLOSE #C1:OPEN #C1, C4, C0, "K:":GET #C1,KEY 1070 IF KEY=155 AND CURX=C4 THEN WAIT= WAIT+C1+C4\*(WAIT>29>+C5\*(WAIT>45>+10\*( WAIT>90> MHII > 70 > 1080 IF KEY=155 AND CURX=11 THEN WAIT= WAIT-C1-C4\* (WAIT>30 > -C5\* (WAIT>50 > -10\* (WAIT>100 > :IF WAIT<C0 THEN WAIT=C0 1090 IF KEY=155 AND CURX=18 THEN PAUSE = NOT PAUSE WΖ = NOT PAUSE
1100 IF KEY=155 AND CURX=25 AND PAUSE
THEN 1270
1110 IF KEY=155 AND CURX=32 THEN POP:
POP:GOTO 260
1120 IF KEY=42 AND CURX<32 THEN CURX=C
URX+C7:POKE 657,OLDX:? ";:POKE 657,C
URX:? "";:OLDX=CURX
1130 IF KEY=43 AND CURX>C4 THEN CURX=C
URX-C7:POKE 657,OLDX:? "";:POKE 657,C
URX:? """;:OLDX=CURX
1140 IF PAUSE THEN 1060 KN DH 50 1140 IF PAUSE 1150 RETURN THEN 1060 AQ

G05UB 1060

HC 1170 REM SEQUENCER

1160

0.1

continued on next page

N.C

On

n o

SD

430

UG ER	1180 GOSUB 1630:GOSUB 1680 1190 ? :? "ENTER '0' TO PAUSE SEQUENCE	AB	C2   1720 ? " GAS GAS GAS GAS G
UY	1200 FRAME=C1:5EQ\$="":?	GG	1730 ? " O USLOND DEASTO DPAUSO DADV.O
CO	1210 ? "FRAME #";FRAME;":KIKKK"; 1220 INPUT KEY\$:IF KEY\$=" AND SEQ\$="" THEN SEQ\$=CHR\$(C1):GOTO 960	FV	
ZH	1230 IF KEYS="" THEN FRAME=FRAME-C1:GO	พร	1750 OLDX=C4:OLDY=C1:CURX=OLDX:CURY=OL
ZJ	TO 960 1240 KEY=VAL (KEY\$):IF KEY (CO OR KEY) FR AMES THEN ? "ሬዝ";:GOTO 1210	BF	DY 1760 POKE 656,CURY:POKE 657,CURX:? "■"
RG PA	1250 SEQ\$ (FRAME, FRAME) = CHR\$ (KEY) 1260 FRAME=FRAME+C1:IF FRAME (101 THEN) 1210	P V B L	1770 FOR I=C1 TO 10:POKE 710,I:POKE 71 2,I:NEXT I:RETURN 1780 RETURN
TX	1265 FRAME=FRAME-C1:GOTO 960 1270 REM ADVANCE	HF NX	2320 REM DIRECTORY 2340 G\$ (C1) = " ": G\$ (616) = " ": G\$ (C2) = G\$:
ĹF	1280 I=I+C1:IF T>LEN(SEQ\$> THEN I=C1 1290 IF ASC(SEQ\$(I,I)>=C0 THEN 1280	NU	K=C0:L=C0:POKE 752,C1 2350 CLOSE #C1:OPEN #C1,C6,C0,"D1:*.*"
១ប	1300 L=ADR(G2\$)+616*(A5C(5EQ\$(I,I))-C1	CO	2360 INPUT #C1, FILENAME\$ 2370 IF FILENAME\$ (C4,11)="SHOP:CLK" TH
50 90	1310 X=USR(PICT, SCRMEM, L, 11, 52, C20) 1320 GOTO 1060	NK	EN GUSUB 2440:RETURN 2380 IF FILENAME\$(C5,C8)="FREE" THEN C
UH CI	1325 REM SAVE SEQUENCE FILE 1330 GOSUB 1630:GOSUB 1680:TRAP 3000	WI	LOSE #C1:GOTO 2410 2390 G\$ (17*K+C1,17*K+LEN(FILENAME\$>>=F
ΧŌ	1340 POSITION C2.C3:? "USE FORMAT: 'DE U:FILENAME.EXT'"	RS	ILENAMES: K=K+C1 2400 GOTO 2360
ии	1350 POKE 752,C0:POSITION C2,C5:? "FILENAME TO SAVE?"; POKE 764,255	ZÕ	2410 FOR I=CO TO 13:POSITION C1,C7+I:? G\$(17*(L+I)+C1,17*(L+I)+17);" ";G\$(1
FI	1360 ON PEEK(764)=255 GOTO 1360:IF PEE K(764)=28 THEN CLOSE #C1:OPEN #C1,C4,C 0,"K:":GET #C1,KEY:GOTO 260	MC	7*(L+I+14)+C1,17*(L+I+14)+17) 2420 NEXT I:? :? FILENAME\$;"
QH	1370 ? "B"; : INPUT FILENAMES : IF FILENAM	AR	2430 RETURN
FP		00	HORMGORGOO *** : RETURN
HM	\$ 1390 SEQ\$(LEN(SEQ\$)+C1)=CHR\$(FRAME5):? #C1;SEQ\$	HA	3000 REM ERROR M5G   3010 CLOSE **C1:POKE 703,C4:POKE 752,C1   :? "M":? " *
VB IG	1400 POKE IOCB+C2,11 1410 POKE IOCB+C4,ADRLO:POKE IOCB+C5,A	ZA	* 5";
ИZ	DRHI 1420 NM=616*FRAME5:NMHI=INT(NM/256):NM	JS	
хх	LO=NM-NMHI*256 1430 POKE IOCB+C8,NMLO:POKE IOCB+C9,NM		">,C1):RETURN :REM DISABLES BREAK WHEN ARG=1
UH		L	ISTING 2
LO	C1>:GOTO 260		100 REM ICON ANIMATION SYSTEM,
QI CT	1455 REM LOAD SEQUENCE FILE 1460 GOSUB 1630:GOSUB 1680:TRAP 3000		LISTING 2, THE SCRIPTER 103 REM BY JIM JOHNSON
AS	1470 POSITION C2,C3:? "USE FORMAT: 'DE V:FILENAME.EXT'":SEQ\$=""	HM VQ	106 REM <c>1989 ANTIC PUBLISHING INC. 110 C0=0:C1=1:C2=2:C3=3:C4=4:C5=5:C6=6</c>
UA	1480 POKE 752,C0:POSITION C2,C5:? "FILENAME TO LOAD?";:POKE 764,255	KD	:C7=7:C8=8:C9=9:C20=20:MAX=C20+C5 120 MODE=C6:OFF=40000:WAIT=10:G05UB 31
KI	1490 ON PEEK(764)=255 GOTO 1490:IF PEE K(764)=28 THEN CLOSE #C1:OPEN #C1,C4,C	EG	000:GOSUB 30000   130 DIM FILENAME\$ (20), TEMP\$ (20), DEVICE
	0,"K:":GET #C1,KEY:GOTO 260		
AB	1500 ? "H"; : INPUT FILENAME \$: IF FILENAM	NE	\$ (3), DPATH\$ (6) 140 DIM G\$ (616), G2\$ (616*MAX)
AB AY	1500 ? "@";:INPUT FILENAME\$:IF FILENAM E\$="" THEN GOSUB 2320:GOTO 1480 1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME	00	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10)
	1500 ? "@";:INPUT FILENAME\$:IF FILENAME E\$="" THEN GOSUB 2320:GOTO 1480 1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC <seq\$(le< td=""><td>00</td><td>140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("h57MATMATMATMATMATMATMATMATMATMATMATMATMATM</td></seq\$(le<>	00	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("h57MATMATMATMATMATMATMATMATMATMATMATMATMATM
AY QG	1500 ? "@";:INPUT FILENAME\$:IF FILENAME\$="" THEN GOSUB 2320:GOTO 1480 1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LEN(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$)-C1)	YX	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhomhomhomhhomhhom Hipfing (2000-2006) (2
AY	1500 ? "M";:INPUT FILENAME\$:IF FILENAME E\$="" THEN GOSUB 2320:GOTO 1480 1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$)-C1) 1530 POKE 10CB+C2,C7 1540 POKE 10CB+C4,ADRLO:POKE 10CB+C5,A	OC YX HJ	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("had made and made an
AY QG NG	1500 ? ""G";:INPUT FILENAME\$:IF FILENAME E\$="" THEN GOSUB 2320:GOTO 1480 1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(SEQ\$),LEN(SEQ\$)):5EQ\$=SEQ\$(C1,LEN(SEQ\$)-C1) 1530 POKE IOCB+C2,C7 1540 POKE IOCB+C4,ADRLO:POKE IOCB+C5,ADRHI 1550 NM=616*FRAMES:NMHI=INT(NM/256):NM	OC YX HJ XZ OC	140 DIM G\$(616),G2\$(616*MAX) 150 DIM SEQ\$(101),FILE\$(20*10),SCRIPT( 101),CYCLE(10),FNL(10) 170 PICT=ADR("hhomhomhomhomhomhom ENDFMERMERICALIZATION ") 190 G\$="\$":G\$(616)=G\$:G\$(2)=G\$ 260 TRAP OFF:GOSUB 1500:POSITION C2,C3
AY QG NG 1R	1500 ? "M";:INPUT FILENAME\$:IF FILENAME  E\$="" THEN GOSUB 2320:GOTO 1480  1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME  \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(5EQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$)-C1)  1530 POKE 10CB+C2,C7  1540 POKE 10CB+C4,ADRLO:POKE 10CB+C5,ADRHI  1550 NM=616*FRAMES:NMHI=INT(NM/256):NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NM	YX HJ XZ OC	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("h.b.] M.B. M.B. M.B. M.B. M.B. M.B. M.B. M.
AY QG NG IR XK YI	1500 ? ""G";:INPUT FILENAME\$:IF FILENAME  E\$="" THEN GOSUB 2320:GOTO 1480  1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME  \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$))  1530 POKE IOCB+C2,C7  1540 POKE IOCB+C4,ADRLO:POKE IOCB+C5,A  DRHI 1550 NM=616*FRAMES:NMHI=INT(NM/256):NM LO=NM-NMHI*256  1560 POKE IOCB+C8,NMLO:POKE IOCB+C9,NM HI 1570 X=USR(ADR("hhh@LUM"),16)	YX HJ XZ OC TF	140 DIM G\$ (616), G2\$ (616*MAX)   150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT (101), CYCLE (102), FNL (102)   170 PICT=ADR ("hhomhomhomhomhomhomhom)   190 G\$="\$":G\$ (616) = G\$: G\$ (2) = G\$   260 TRAP OFF: GOSUB 1500: POSITION C2, C3   270 ? "
AY  QG  NG IR  XK  YI  HH  KO ON	1500 ? """; INPUT FILENAME*:IF FILENAME  E*="" THEN GOSUB 2320:GOTO 1480  1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME  \$  1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(5EQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$)-C1)  1530 POKE 10CB+C2,C7  1540 POKE 10CB+C4,ADRLO:POKE 10CB+C5,ADRHI  1550 NM=616*FRAMES:NMHI=INT(NM/256):NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMHI  1570 X=USR(ADR("hhhmlum"),16)  1580 CLOSE #C1:GOTO 960  1590 REM PAUSE	HJ XZ OC TF II	140 DIM G\$(616),G2\$(616*MAX) 150 DIM SEQ\$(101),FILE\$(20*10),SCRIPT( 101),CYCLE(10),FNL(10) 170 PICT=ADR("hhomhomkhomhomhomhomhomhomhomhomhomhomhomhomhomh
AY AG NG IR XK YI HH KO ON AO PH	1500 ? """; INPUT FILENAME*:IF FILENAME  ### ### ### ### ### ### ### ### ### #	HJ XZ OC TF II	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhomhomhomhomhomhom Homewall (10) (10) (10) (10) (10) (10) (10) (10)
AY  QG  NE IR  XK  YI  WH  KOO  AO  PU  NM	1500 ? """; INPUT FILENAME\$: IF FILENAME  E\$="" THEN GOSUB 2320: GOTO 1480  1510 CLOSE #C1: OPEN #C1, C4, C0, FILENAME  \$ 1520 INPUT #C1; SEQ\$: FRAMES=ASC (SEQ\$ (LE N (SEQ\$), LEN (SEQ\$)): 5EQ\$=SEQ\$ (C1, LEN (SEQ\$), C1)  1530 POKE 10CB+C2, C7  1540 POKE 10CB+C4, ADRLO: POKE 10CB+C5, ADRHI  1550 NM=616*FRAMES: NMHI=INT (NM/256): NM L0=NM-NMHI*256  1560 POKE 10CB+C8, NMLO: POKE 10CB+C9, NM HI  1570 X=USR (ADR ("hhhmlum"), 16)  1580 CLOSE #C1: GOTO 960  1590 REM PAUSE  1600 FOR DELAY=C1 TO 100  1610 IF PEEK (764) <>255 THEN GOSUB 1060  1620 NEXT DELAY: RETURN  1630 REM TITLE SCREEN	YX HJ XZ OC TF II UZ UN	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhaghaghaghaghaghaghaghaghaghaghaghaghagh
AY  QG  NG IR  XK  YI  WH  KO ON AO PUL	1500 ? """; INPUT FILENAME*:IF FILENAME  # 1510 CLOSE #C1:OPEN #C1, C4, C0, FILENAME  # 1520 INPUT #C1; SEQ\$: FRAMES=ASC (SEQ\$ (LE  N(SEQ\$), LEN(SEQ\$)): SEQ\$=SEQ\$ (C1, LEN(SEQ\$))  # 1530 POKE IOCB+C2, C7  # 1540 POKE IOCB+C4, ADRLO: POKE IOCB+C5, ADRHI  # 1550 NM=616*FRAMES: NMHI=INT (NM/256): NM  # LO=NM-NMHI*256  # 1560 POKE IOCB+C8, NMLO: POKE IOCB+C9, NM  # II  # 1570 X=USR (ADR("hhhmelum"), 16)  # 1580 CLOSE #C1: GOTO 960  # 1590 REM PAUSE  # 1600 FOR DELAY=C1 TO 100  # 1610 IF PEEK (764) (>255 THEN GOSUB 1060  # 1620 NEXT DELAY: RETURN  # 1630 REM TITLE SCREEN  # 1640 GRAPHICS C0: POKE 709, C0: POKE 710, C0: GOSUB 31000: POKE 752, C1	HJ XZ OC TF II	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhomhomhomhomhomhom Homeomemazaeaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
AY  QG  NG IR  XK  YI  HH  KO ON AO PM JL  NMM EM	1500 ? """; INPUT FILENAME*:IF FILENAME  E\$="" THEN GOSUB 2320:GOTO 1480  1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME  \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$)-C1)  1530 POKE 10CB+C2,C7  1540 POKE 10CB+C4,ADRLO:POKE 10CB+C5,ADRH1  1550 NM=616*FRAMES:NMHI=INT(NM/256):NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMHI  1570 X=USR(ADR("hhh@LUM"),16)  1580 CLOSE #C1:GOTO 960  1590 REM PAUSE 1600 FOR DELAY=C1 TO 100  1610 IF PEEK(764)<>255 THEN GOSUB 1060  1620 NEXT DELAY:RETURN  1630 REM TITLE SCREEN  1640 GRAPHICS C0:POKE 709,C0:POKE 710,	HJ XZ OC TF II UN HE CE	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhomhomhomhomhomhom Homeome 20 Pict=ADR ("hhomhomhomhomhomhomhom ") 190 G\$="\B" "G\$ (616) = G\$ : G\$ (2) = G\$ 260 TRAP OFF : GOSUB 1500 : POSITION C2, C3  270 ? "
AY  QG  NG  IR  XK  YI  WH  KOO  AOO  PW  LN  LP  BG	1500 ? """; INPUT FILENAME\$: IF FILENAME  \$5:"" THEN GOSUB 2320: GOTO 1480  1510 CLOSE #C1: OPEN #C1, C4, C0, FILENAME  \$1520 INPUT #C1; SEQ\$: FRAMES=ASC (SEQ\$ (LE N (SEQ\$), LEN (SEQ\$)): SEQ\$=SEQ\$ (C1, LEN (SEQ\$), C1)  1530 POKE 10CB+C2, C7  1540 POKE 10CB+C4, ADRLO: POKE 10CB+C5, ADRHI  1550 NM=616*FRAMES: NMHI=INT (NM/256): NM L0=NM-NMHI*256  1560 POKE 10CB+C8, NMLO: POKE 10CB+C9, NM HI  1570 X=USR (ADR ("hhbml VM"), 16) 1580 CLOSE #C1: GOTO 960 1590 REM PAUSE 1600 FOR DELAY=C1 TO 100 1610 IF PEEK (764) <>255 THEN GOSUB 1060 1620 NEXT DELAY: RETURN 1630 REM TITLE SCREEN 1640 GRAPHICS C0: POKE 709, C0: POKE 710, C0: GOSUB 31000: POKE 752, C1 1650 POSITION C0, C0: ? "HEGOIMBURGEDOOD"  **MODERICATION CO, C0: ? "HEGOIMBURGEDOOD"  **MODERICATION CO, C1: ? "HEGOIM	HJ XZ OC TF II UZ UN HE CE	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhadkhadhadhadhhadhhadhhadh BDF MAR COLUMBEZ (100 MAR COLUMBE) 190 G\$ = "\$": G\$ (616) = G\$ : G\$ (2) = G\$ 260 TRAP OFF: GOSUB 1500 : POSITION C2, C3  270 ? " GBB": ? " DD CREATE SCRIPT": ? " MBB": 200 DD LOAD SCRIPT": ? " BBB": ? " DD SAVE SCRIPT": ? " BBB": ? " DD SAVE SCRIPT": ? " BBB": ? " DD SAVE SCRIPT": ? " BBB": ? " DD SEQUENCER": ? " 100 ? " BBB": ? " DD SEQUENCER": ? " 100 ? " BBB": ? " DD LOAD SEQUENCES 10 RAMDISK": ? " BBB" 330 IF RAMDISK=1 THEN POSITION 5, 19: ? "X': ? 340 GOSUB 1550 350 OLDX=C5:OLDY=C4:CURX=OLDX:CURY=OLD Y 360 CLOSE #C1:OPEN #C1, C4, C0, "K:": GET #C1, KEY
AY  QG  NG  IR  XK  YI  HHO  ON  AD  PH  JL  NM  EM  LP  BG  ZM	1500 ? """; INPUT FILENAME\$: IF FILENAME  \$5:"" THEN GOSUB 2320: GOTO 1480  1510 CLOSE #C1: OPEN #C1, C4, C0, FILENAME  \$1520 INPUT #C1; SEQ\$: FRAMES=ASC (SEQ\$ (LE N (SEQ\$), LEN (SEQ\$)): SEQ\$=SEQ\$ (C1, LEN (SEQ\$), C1)  1530 POKE 10CB+C2, C7  1540 POKE 10CB+C4, ADRLO: POKE 10CB+C5, ADRHI  1550 NM=616*FRAMES: NMHI=INT (NM/256): NM L0=NM-NMHI*256  1560 POKE 10CB+C8, NMLO: POKE 10CB+C9, NM HI 1570 X=USR (ADR ("hhbelum"), 16) 1580 CLOSE #C1: GOTO 960 1590 REM PAUSE 1600 FOR DELAY=C1 TO 100 1610 IF PEEK (764) <>255 THEN GOSUB 1060 1620 NEXT DELAY: RETURN 1630 REM TITLE SCREEN 1640 GRAPHICS C0: POKE 709, C0: POKE 710, C0: GOSUB 31000: POKE 752, C1 1650 POSITION C0, C0:? "MEMORIMMENTALED " 1660 POSITION C0, C0:? "MEMORIMMENTALED " 1660 POSITION C0, C1:? """ 1670 RETURN 1680 FOR I=C1 TO 10: POKE 710, I: NEXT I: RETURN	HJ XZ OC TF II UZ UN HE CE UN HF XQ	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FILE (10) 170 PICT=ADR ("hhomhomkhomhomhomhomhomhomhomhomhomhomhomhomhomh
AY  QG  NG  IR  XK  YI  WH  KOON  AOO  PW  JLM  EM  LN  LP  BG  ZM	1500 ? """; INPUT FILENAME*:IF FILENAME  E\$="" THEN GOSUB 2320:GOTO 1480  1510 CLOSE #C1:OPEN #C1,C4,C0,FILENAME  \$ 1520 INPUT #C1;SEQ\$:FRAMES=ASC(SEQ\$(LE N(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$),LEN(SEQ\$)):SEQ\$=SEQ\$(C1,LEN(SEQ\$),C1)  1530 POKE 10CB+C2,C7  1540 POKE 10CB+C4,ADRLO:POKE 10CB+C5,ADRHI  1550 NM=616*FRAMES:NMHI=INT(NM/256):NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMLO=NM-NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMLO=NM-NMHI*256  1560 POKE 10CB+C8,NMLO:POKE 10CB+C9,NMLO=NMHI*256  1560 POKE 10CB+C9,NMLO:POKE 10CB+C9,NMLO=NMHI*256  1560 POKE 10CB+C9,NMLO	HJJXZ OC TF II UN HE CE UN HF X U OK	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FNL (10) 170 PICT=ADR ("hhomhomhomhhomhhomhhomhomhomhomhomhhomh
AY  QG  NG  IR  XK  YI  HHO  ON  AD  PH  JL  NM  EM  LP  BG  ZM	1500 ? """; INPUT FILENAME\$: IF FILENAME  \$5:"" THEN GOSUB 2320: GOTO 1480  1510 CLOSE #C1: OPEN #C1, C4, C0, FILENAME  \$1520 INPUT #C1; SEQ\$: FRAMES=ASC (SEQ\$ (LE N (SEQ\$), LEN (SEQ\$)): SEQ\$=SEQ\$ (C1, LEN (SEQ\$), C1)  1530 POKE 10CB+C2, C7  1540 POKE 10CB+C4, ADRLO: POKE 10CB+C5, ADRHI  1550 NM=616*FRAMES: NMHI=INT (NM/256): NM L0=NM-NMHI*256  1560 POKE 10CB+C8, NMLO: POKE 10CB+C9, NM HI  1570 X=USR (ADR ("hhhmlum"), 16) 1580 CLOSE #C1  1590 REM PAUSE 1600 FOR DELAY=C1 TO 100 1610 IF PEEK (764) <>255 THEN GOSUB 1060 1620 NEXT DELAY: RETURN 1630 REM TITLE SCREEN 1640 GRAPHICS CO: POKE 709, C0: POKE 710, C0: GOSUB 31000: POKE 752, C1 1650 POSITION C0, C0:? "INGOINMONNEMEDICAL MEMBERS AND CO: POKE 752, C1 1650 POSITION C0, C0:? "INGOINMONNEMEDICAL MEMBERS AND CO: POKE 750, I: NEXT I: RETURN 1690 GRAPHICS MODE: GOSUB 31000: POKE 75 2, C1: PAUSE=C0 1700 POKE 708, C0: POKE 709, C0: POKE 710, C0: POKE 712, C0: POKE 710, C0: POKE 710, C0: POKE 712, C0: POKE 712	HJ XZ OC TF II UZ UN HE CE UN HF XQ	140 DIM G\$ (616), G2\$ (616*MAX) 150 DIM SEQ\$ (101), FILE\$ (20*10), SCRIPT ( 101), CYCLE (10), FILE (10) 170 PICT=ADR ("hhomhadkhadhadhadhadhhadhhadhadhadhadhadhadhadha

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NL 420 IF KEY=155 AND CURY=13 AND FILE$<>
"" THEN 800

WK 430 IF KEY=155 AND CURY=16 THEN TRAP 2
60:RUN "D:ANIMATOR.BAS"

NP 440 IF KEY=155 AND CURY=19 THEN 850
QQ 460 POSITION OLDX.OLDY:? "";:POSITION
CURX.CURY:? "M";:OLDX=CURX:OLDY=CURY
          470 GOTO 360
480 REM CREATE SCRIPT
490 GD5UB 1500:GO5UB 1550
500 DEVICE$="D?:":DEVICE$<(2,2)=5TR$<(RA
 97
          LM
UR
          530 OLDX=C3:OLDY=C4+FILE*C2:CURX=OLDX:
         CURY=OLDY:I=C1
540 CLOSE #C1:OPEN #C1,C4,C0,"K:":GET
XO
          #C1,KEY
550 IF KEY=45
RY-C2:GOTO 590
                                 KEY=45 AND CURY>C4 THEN CURY=CU
         560 IF KEY=61 AND CURY<C4+FILE*C2 THEN CURY=CURY+C2:GOTO 590
570 IF KEY=155 AND CURY=C4+FILE*C2 THEN 260
DO
          580 IF KEY=155 AND CURY>C3 AND CURY<C5
         580 IF KEY=155 AND CURY>C3 AND CURY<C5
+FILE*C2 THEN 610
590 POSITION OLDX,OLDY:? "";:POSITION
CURX,CURY:? """;:OLDX=CURX:OLDY=CURY
600 GOTO 540
610 FILE$=G$:FILENAME$=FILE$<C8*CCURY
/C2>-C2>+C1,C8*CCURY/C2>-C2>+FNLCURY
          620
                       SCRIPT (I) = CURY/C2-C1: POSITION OLDX
LH
             OLDY:?
          630 POSITION 17,C4+I:? FILENAME$:POSIT
ION 28,C4+I:? " 日田田田田:;:POKE 752,C0
TD
         ION 28, C4+I:? " HEREN:;:POKE 752, C0
640 TRAP 630:INPUT KEY:POKE 752, C1:?
IF KEY<C0 OR KEY>100 THEN 630
650 CYCLE<I>=KEY:5EQ=I:I=I+C1:IF I=11
UD
          THEN 260
660 POSITION OLDX,OLDY:? "M";:GOTO 540
670 REM LOAD SCRIPT
680 TRAP 3000:DEVICE$="D?:":DEVICE$<2,
2>=STR$ (RAMDISK):GOSUB 1700:GOSUB 1500
QN
           :G05UB 1550
        690 POSITION C2, C3:? "USE FORMAT: 'DEV :FILENAME.EXT'"
695 POKE 752, C0: POSITION C2, C5:? "FILE NAME TO LOAD?"; :POKE 764, 255
696 ON PEEK (764) = 255 GOTO 696: IF PEEK (764) = 28 THEN CLOSE #C1: OPEN #C1, C4, C0, "K: ":GET #C1, KEY: GOTO 260
700 ? "\*"; INPUT FILENAME \$: IF FILENAME \$="" THEN GOSUB 2320: GOTO 695
710 CLOSE #C1: OPEN #C1, C4, C0, FILENAME \$720 GET #1, SEQ: FOR I =C1 TO SEQ: GET #C1, J: SCRIPT (1) = J: GET #C1, J: CY CLE (I) = J: NE XT I: INPUT #C1; FILE \$: CLOSE #C1
725 FOR J=C1 TO SEQ: FILENAME \$=FILE \$(C8) \$(C1) + C1, C8 \$(C1) - C1) + C8 \$(C1) - C27
          690 POSITION C2, C3:? "USE FORMAT: 'DEV
MB
OD
VR
          GOTO
                          727
KP
           728 FNL (J) = 1 : NEXT J
          728 FNL(3)=1:NEXT 3
730 GOTO 260
740 REM SAVE SCRIPT
750 TRAP 3000:GOSUB 1500:GOSUB 1550:PO
SITION 2,3:? "USE FORMAT: 'DEV:FILENAM
E.EXT'"
DU
          750
         SITION 2,3:? "USE FORMAT: 'DEU:FILENAME.EXT'"
755 POKE 752,CO:POSITION C2,C5:? "FILE
NAME TO SAVE?";:POKE 764,255
756 ON PEEK(764)=255 GOTO 756:IF PEEK(
764)=28 THEN CLOSE *C1:OPEN *C1,C4,C0,
"K:":GET *C1,KEY:GOTO 260
760 ? "\";:INPUT FILENAME$:IF FILENAME
$="" THEN GUSUB 2320:GOTO 755
770 CLOSE *C1:OPEN *C1,C8,C0,FILENAME$
780 PUT *C1,SEQ:FOR I=C1 TO SEQ:J=SCRI
PT(I):PUT *C1,J:J=CYCLE(I):PUT *C1,J:N
EXT I:? *C1;FILE$:CLOSE *C1
LG
          790 GOTO 260

800 REM RUN SCRIPT

810 FILENAMES="D?:":FILENAMES(2,2)=STR

$(RAMDISK):GOSUB 1560:G$=FILE$

820 FOR J=C1 TO SEQ:I=SCRIPT(J):GOSUB
           1360
           830 FOR K=C1 TO CYCLE (J) : GOSUB 970: NEX
```

NEXT J:POKE 77, C0:GOTO 820

REM LOAD RAMDISK

```
HU | 860 GOSUB 1500: GOSUB 1550
MP
     870 DEULCES="D1:":GOSUB 1700:GOSUB 182
     880 IF NOT FILE THEN CLOSE #C1:OPEN #
C1.C4.C0,"K:":GET #C1,KEY:GOTO 260
890 IF PEEK(53279)=3 THEN 910
892 POKE 5439,ASC("1"):REM LOAD DUP.SY
MD
HZ
XY
     S FROM DRIVE #1
895 DPATHS="D?:*.*":DPATHS(2,2)=5TRS(R
AMDISK):TRAP 910:CLOSE #C1:DPEN #C1,C4
SR
      , CO, DPATHS
SU
                    33, #C1, C0, C0, DPATH$ : CLOSE #C1:
     ЦY
     930 FILENAME $="D1:":GOSUB 1360:GOSUB 1
     249
0.13
     940
             POSITION C3,C2+1*C2:? " "; :NEXT I:
             260
REM DISPLAY IMAGES
     GOTO
ZU
     950
             REM
             G05UB 1560
     970 L=ADR(G$):SCRMEM=PEEK(88)+PEEK(89)
*256+C4+C4*20
980 FOR I=C1 TO LEN(5EQ$)
990 IF A5C(5EQ$(I,I)>=C0 THEN GOSUB 14
ZI
HT
JIR
     70:GOTO 1040
BΒ
     1000 L=ADR(G2$)+616*(A5C(5EQ$(I,I))-C1
     1010 X=USR(PICT,SCRMEM,L,11,52,C20)
1020 FOR DELAY=C1 TO WAIT:IF PEEK(764)
<>255 THEN GOSUB 1060
1025 NEXT DELAY:POKE 77,C0
SK
X D
     1030 IF PEEK (764) (>255 THEN GOSUB 1060 1040 NEXT I 1050 RETURN
PD
FR
0.0
     1050 RETURN
1060 CLUSE #C1:OPEN #C1,C4,C0,"K:":GET
#C1,KEY:POKE 764,255
1070 IF KEY=155 AND CURX=C4 THEN WAIT=
WAIT+C1+C4*(WAIT>29)+C5*(WAIT>45)+10*(
     WAIT>90>
     HATT-907
1080 IF KEY=155 AND CURX=11 THEN WAIT=
WAIT-C1-C4*(WAIT>30)-C5*(WAIT>50)-10*(
WAIT>100):IF WAIT<C0 THEN WAIT=C0
1090 IF KEY=155 AND CURX=18 THEN PAUSE
NOT PAUSE
HZ
     1100 IF K
                    KEY=155 AND CURX=25 AND PAUSE
     1110 IF
                    KEY=155 AND CURX=32 THEN POP
D W
     POP : GOTO 260

1120 IF KEY=155 AND CURX<32 THEN PUP:
POP : GOTO 260

1120 IF KEY=42 AND CURX<32 THEN CURX=C
URX+C7:POKE 657,CLDX:? "";:POKE 657,C
URX:? """;:OLDX=CURX

1130 IF KEY=43 AND CURX>4 THEN CURX=CU
RX-C7:POKE 657,CLDX:? "";:POKE 657,CU
UI
     RX:? "M";:OLDX=CURX
1140 IF PAUSE THEN 1060
     1150 RETURN
ΔB
               G05UB 1060
     1169
0.1
     1170 REM ADVANCE

1170 REM ADVANCE

1175 IF SEQ$="" THEN 1060

1180 I=I+C1:IF I>LEN(SEQ$> THEN I=C1

1190 IF ASC(SEQ$(I,I>)=C0 THEN 1180

1200 L=ADR(G2$>+616*(ASC(SEQ$(I,I>)-C1
LD
              X=USR(PICT, SCRMEM, L, 11, 52, C20)
GOTO 1060
GOSUB 1500
REM SAVE SEQUENCE FILE
FILENAME $ (C2, C2) = "8"
CLOSE #C1:TRAP 1345:OPEN #C1, C8, C
     1210
PY
ZJ
     1230
DIE:
     1240
1250
Th
     1260
     0, FILENAMES
HE.
     1270 SEQ$ (LEN (SEQ$)+C1)=CHR$ (FRAMES):?
       #C1;5EQ$
     1280 TOCB=832+16:POKE TOCB+2,11
1290 ADRHI=INT(ADR(G2$)/256):ADRLO=ADR
(G2$)-ADRHI*256
BB
1. Y
     1300 POKE IOCB+C4, ADRLO: POKE IOCB+C5, A
18
     DRHT
UU
     1310 NM=616*FRAMES:NMHI=INT(NM/256):NM
     LO=NM-NMHI*256
X 5
     1320 POKE IOCB+C8, NMLO: POKE IOCB+C9, NM
     HT
DI
     1330 X=USR CADR ("hhhbal UM"), 16) : IF
                                                                      CPEEK
      (IOCB+C9)*256+PEEK(IOCB+C8)) (>NRED THE
      N 1345
ХG
     1340 CLOSE #C1: SEQ$=SEQ$ (C1, LEN (SEQ$) -
```

1345 TRAP 260:CLOSE #C1:OPEN #C1,C4,C0,FILENAME\$:XIO 33,#C1,C0,C0,FILENAME\$:CLOSE #C1:GOTO 260 continued on next base

C1>: RETURN 1345 TRAP

D.L.

continued on next page

RG

840

```
ZR 1350 GOSUB 1500
PP 1360 REM LOAD SEQUENCE FILE
FM 1370 FILENAME $ CC4 > = G $ CC8 * CI - C1 > + C1 , C8 *
        -C1>+FNL(I>):FILENAME$(C4+FNL(I>)=".
     SER
    1380 TRAP 1465:CLOSE #C1:OPEN #C1,C4,C
0,FILENAME$
1390 INPUT #C1;SEQ$:FRAMES=ASC(SEQ$(LE
XY
a x
     N (SEQ$), LEN (SEQ$) >> : SEQ$=SEQ$ (C1, LEN (S
     EQ$> - C1>
    1400 IOCB=832+16:POKE IOCB+C2,C7
1410 ADRHI=INT(ADR(G2$)/256):ADRLO=ADR
(G2$)-ADRHI*256
UH
     1420 POKE IOCB+C4, ADRLO: POKE IOCB+C5, A
     DRHI
     1430 NM=616*FRAMES:NMHI=INT(NM/256):NM
LO=NM-NMHI*256
X C
     1440 POKE IOCB+C8, NMLO: POKE IOCB+C9, NM
PG
     1450 X=USR CADR C"hhhmLVM">, 16> : NRED=PEE
     K (IOCB+C9) *256+PEEK (IOCB+C8)
1460 CLOSE #C1:RETURN
1465 POKE 656, C3: POKE 657, C2:? "* SINGS
ΤD
     ing file *
                     (";FILENAME$;")
                                                  "; : POKE 6
     56, CURY
     1466 FOR DELAY=C1 TO WAIT:IF PEEK(764)
<>255 THEN GOSUB 1060
1467 NEXT DELAY:POKE 77,C0
1468 POP :GOTO 840
YU
JK
            REM PAUSE
                  DELAY=C1 TO 100: IF PEEK (764) (
DC
     1480
            FOR
            THEN GOSUB 1060

THEN GOSUB 1060

NEXT DELAY:RETURN

REM TITLE SCREEN

GRAPHICS CO:POKE 709,CO:POKE 710,
     >255
KC:
     1490
NB
     1500
    1510
XU
LE
     1540 RETURN
1550 FOR I=C1 TO 10:POKE 710,I:NEXT I:
AU
28
     RETURN
     1560 GRAPHICS MODE:GOSUB 31000:POKE 75
2,C1:PAUSE=C0
OΠ
     1570 POKE 708,C0:POKE 709,C0:POKE 710,
C0:POKE 712,C0
1580 COLOR C1:PLOT 30,C2:DRAWTO 121,C2
YZ
z_0
                                       30,57:DRAWTO
     :DRAWTO 121,57:DRAWTO
     1590 ? " 🖼
                                                    A5
                              (2005)
     1600 ? " O OSLOWO OFASTO OPAUSO MADV.O
FU
      DEXIT
             ? " (988)
                              1610
ΜИ
     1620 OLDX=C4:OLDY=C1:CURX=OLDX:CURY=OL
ΑU
     1630 POKE 656, CURY: POKE 657, CURX: ? """
     1640 FOR I=C1 TO 10:POKE 710,I:POKE 71
2,I:NEXT I:RETURN
PK
     1650 RETURN
            FOR DELAY=C1 TO 100
IF PEEK(764)<>255 THEN GOSUB 1060
NEXT DELAY:RETURN
     1660
     1679
KD
     1680
     1690
             RETURN
BM
     1700 REM DIRECTORY OF SEQUENCES 1710 G$ (C1) = " ": G$ (20*10) = " ": G
 22
     s:FILE=C0
     1720 FILENAMES=DEVICES:FILENAME$(4)="*
.5EQ":CLOSE #C1:OPEN #C1,C7,C0,FILENAM
SP
     FS
CM
     1730 INPUT #C1, FILENAME$
     1740 IF FILENAME$ (C5,C8) = "FREE" OR FIL
E>8 THEN CLOSE #C1:GOTO 1800
1750 FILE=FILE+C1
1760 FILENAME$ = FILENAME$ (C3,LEN FILENA
MC
MM
      ME$>-C7>:G$ (C8*(FILE-C1>+C1,C8*(FILE-C
     1>+C8>=FILENAME$
1770 FOR 1=C8 TO C1 STEP -C1:IF FI
ME$(I,I><>" " THEN FNL(FILE>=I:POP
                                                       FILENA
 KE
         1790
      TO
     1780 NEXT I
1790 GOTO 1730
 SH
     AP
 KL
        1840
     1830 FOR I=C1 TO FILE:? "U U";:? G$<C8
*(I-C1)+C1,C8*(I-C1)+C8);:? "U":? "UHHU
U":NEXT I
 HD
 LP
     1840
            ?
               "HEDDEN HADD"; : IF FILE THEN ?
```

```
MC 1850 ? "
                                                                                 * NO SEQUENCE FILES *"
                                                              ···
RE
                    1860
                    1870
                                                      RETURN
                    2320 REM DIRECTORY

2340 G$ (C1) =" ":G$ (616) =" ":G$ (C2) =G$;

K=C0:L=C0:POKE 752,C1

2350 CLOSE #C1:OPEN #C1,C7,C0,"D1:*.*"

2360 INPUT #C1,FILENAME$
HF
MX
OV
                   2370 IF FILENAME$ (C4,11) = "5HOP:CLK" TH
EN GOSUB 2440:RETURN
2380 IF FILENAME$ (C5,C8) = "FREE" THEN C
LOSE #C1:GOTO 2410
2390 G$ (17*K+C1,17*K+LEN(FILENAME$>) = F
ΝŒ
NK
                    2390 G$ (17*K+C1,17*K+LENTFILENHIE$)]=F
ILENAME$:K=K+C1
2400 GOTO 2360
2410 FOR I=C0 TO 13:POSITION C1,C7+I:?
G$ (17*(L+I)+C1,17*(L+I)+17);" ";G$ (1
7*(L+I+14)+C1,17*(L+I+14)+17)
2420 NEXT I:? :? FILENAME$;"
                    2430 RETURN
2440 POSITION 2,22:? "
GODDINGORGING *G"; RETURN
 MIG
                                                                                                                                                                                                                       * DRITHIT S
                    | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| | 10| 
 HЯ
 ZA
                     4:GOTO 260
                     30000 RAMDISK=1:TRAP 30010:CLOSE #4:0P
                    EN #4,6,0,"D8:*.*":RAMDISK=8
30010 TRAP 30020:CLOSE #4
30020 TRAP 0FF:RETURN
31000 BRK=USR (ADR ("hDMMMhhmM@NDPTBWDR)
 QL
  K5
                         '>,C1>:RETURN
   LISTING 3
 IN 10 REM ICON ANIMATION SYSTEM,
LISTING 3
                     20 REM BY JIM JOHNSON
30 REM (C) 1985,1989 ANTIC PUBLISHING
35 REM (CREATES LINES 170 & 31000 FOR
LISTINGS 1 AND 2. CREATES LINE 160 FOR
    40
   EX.
    20
                              LISTING
                     LISTING 1)
40 REM (LINES 10-250 MAY BE USED WITH
0THER BASIC LOADERS IN THIS ISSUE.
50 REM CHANGE LINE 70 AS NECESSARY.)
60 DIM FN$(20), TEMP$(20), AR$(93):DPL=P
EEK(10592):POKE 10592,255
70 FN$="D:LINES.LST":REM THIS IS THE N
AME OF THE DISK FILE TO BE CREATED
80 ? "MDISK OF @assette?";:POKE 764,25
    EU
   PR
   RD
    PΥ
                      90 IF
                                                                      NOT (PEEK(764)=18 OR PEEK(764)=
                                             THEN 90
IF PEEK
                        583
                                                                   PEEK (764)=18 THEN FN$="C:"
                      100
                                         THE PEEK (764) = 18 THEN FNS = "C:"
POKE 764,255: GRAPHICS 0:? "
AN
STATEMENT BASIC LOADER"
COMMENT BASIC LOADER
C
    UB
                      110
                         TIC
    MY
                       120
                       130
    K8
                        140
                        150 RESTORE : READ LN:LM=LN:DIM A$ (LN):
    LW
                        C = 1
                       160 AR$="":READ AR$
170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
    80
                       180 LM=LM-1:POSITION 10,10:? "Countdo
    DH
                      Wn...T-";INT (LM/10);") "
190 A$ (C,C) = CHR$ (VAL (AR$ (X, X+2))) : C=C+
1:NEXT X:GOTO 160
200 IF PEEK (195) = 5 THEN ? :? :? "$\text{MANY DATA LINES!":? "CANNOT CREATE FILES!":? "CANNOT CREATE FILES!"
    BK
                         E!":END
                      210 IF C<LN+1 THEN ? :? "INTOO FEW DATA LINES!":? "CANNOT CREATE FILE!":END 220 IF FN$="C:" THEN ? :? " Prepare cassette, press [RETURN]" 230 OPEN *1,8,0,FN$ 240 POKE 766,1:? *1;A$;:POKE 766,0 250 CLOSE *1:GRAPHICS 0:? "MODIFICATION"
    CH
     UQ
     BB
     PU
     AL.
     ΕU
                         1000 DATA 204
                        1010 DATA 0490540480320830820650680820
61065068082040034104104141005003104141
004003104141011003104141010
     DH
                        1020 DATA 0031041041410010031041041701
69082141002003032083228202173003003201
001240004224000208241169000
1030 DATA 1332131730030031332120960340
     DL
```

082040034104104133204104133

DATA 2031041332061041332051041041

UJ

1040

GOTO 1860

XK 1060 DATA 0480480320660820750610850830 82040065068082040034104169000133077104 104201000240007169112133016 1070 DATA 1410142100960340410440490410 58082069084085082078032155

#### HELP files printed on half the pages

## **Two-Column Print Pro**

TYPO II Codes

Article on page 13

#### LISTING 1

DA 2 REM TWO-COLUMN PRINTING REM BY EARL HALEY
REM CC>1989, ANTIC PUBLISHING INC.
GRAPHICS 0:POKE 710,14:POKE 712,14:
JKE 709,2:DIM BUZ\$(3):FOR N=1 TO 3:BU AD PF LF POKE Z\$(N)=CHR\$(253):NEXT N
20 ?:?:? " TWO-COLUMN PRINTER PROGRA
M":?:?" By Earl Haley" GJ

\$ (KSIZE), R\$ (41), TEST\$ (2), FILENAME\$ (15)
:PAGE=0:FILE=1:FINISHED=0
40 HEANK\$ (1)=" ":BLANK\$ (KSIZE)=" ":BLA 40 NK\$(2)=BLANK\$:COL1\$=BLANK\$:COL2\$=BLANK

GOSUB 700:GOSUB 800:GOTO 370 0 TRAP 230:CLOSE #1:OPEN #1,4,0,FILE

FW

0.0

NY

L.U

MG ZZ "DISK DRIVE ERROR": CLOSE #1:GOTO

380 IH

246 ? "DISK ERROR": CLOSE #1: GOTO 380 ZH 250 PAGE=PAGE+1

5=1:F=40 NO

280 FOR PRYNTLYNE=1 TO NL 290 ? #2;COL1\$(5,F);COL2\$(5,F) 300 S=F+1:F=5+39 TI SL

BX

? #2:? #2; BLANK\$ (1,36);"- "; PAGE;" YH 330

340 IF FILE<>FINISHED THEN 345
341 ? #2;BLANK\$<1,35>;"- END -":FINISH
ED=0:?"MDDNE !":?""Press a Key":GOSUB OH 660 : RUN

HU

CHR\$(125) 375 IF F5=84 THEN ? :? "< LEGAL SIZE 8 NP

375 IF F5=84 THEN ? :? "< LEGAL SIZE 8
1/2 x 14 INCHES >"
376 IF F5=66 THEN ? :? "< STANDARD SIZE 8 1/2 x 11 INCHES >"
380 ? :? "Be Sure ANTIC DISK Is In Dri TH

25 KSIZE=40×80 30 DIM BLANK\$ (KSIZE), COL1\$ (KSIZE), COL2

NAME : PAGE = 0

NAME\$:PAGE=0
110 TRAP 230
120 FOR COLUMN=1 TO 2
130 S=1:F=40
140 FOR LINE=1 TO NL:REM (NL DEFINED I
N LINES 740 AND 750>
150 INPUT #1,R\$:IF LEN(R\$>=3 THEN IF R
\$(1,3)="XXX" OR R\$(1,3)=BUZ\$ THEN 150
160 ON COLUMN GOTO 170,180
170 COL1\$(5,F)=R\$:GOTO 190
180 COL2\$(5,F)=R\$
190 S=F+1:F=5+39

n n UF TB 5=F+1:F=5+39

200 NEXT LINE 210 NEXT COLUMN 220 GOTO 250 230 IF PEEK(195>=170 THEN ? CHR\$(125): ? :? "FILE NOT FOUND":CLOSE #1:GOTO 38

235 IF PEEK(195)=160 THEN ? "DRIVE# ER ROR":CLOSE #2:GOTO 440 240 IF PEEK(195)=144 THEN ? CHR\$(125):

245 IF PEEK(195)=136 THEN FINISHED=1:G UTO 250

260 CLOSE #2:OPEN #2,8,0,"P:"

310 NEXT PRYNTLYNE
320 COL15=BLANK5:COL25=BLANK5

345 IF CP<>1 THEN 350
346 ? "Pause for Paper Change - Check
Your Pprinter- Press Any Key When R
eady":G05UB 660:G0TO 110
350 IF CP=2 THEN FOR N=1 TO FS-NL-2:?
#2:NEXT N

360 GOTO 110 370 CLOSE #2:GRAPHICS 0:POKE 710,50:?

ve

XK 382 ? :? "Be sure Printer and Paper ar

e ready" 385 ? :? :? "What File do you wish to Print"

390 ? :? :? "(1) 400 ? :? "(2) 01 ANTIC HELP FILE" 00 OTHER": POKE 752,1:? :?

VO 410 GOSUB 660 UC 420 ON BYTE-48 GOTO 430,435 NH 430 FILENAME\$="D:DOC.TXT":FLAG=2:GOTO

A D

435 ? CHR\$(125)
440 ? :? :? :? "CPress RETURN for di
sk directory)":? "CLists only files wi
th .TXT extender)"
450 ? :? "ENTER NAME OF 40-COLUMN TEXT EM

DΟ FILE"

FILE"
460 ? "CD:XXXXXXXXXXXXX"
460 ? "CD:XXXXXXXXXXXXX"

U0 470 TRAP 230:INPUT FILENAME\$:IF FILENA
ME\$="" THEN GOSUB 590:GOTO 440

EM 472 IF LEN(FILENAME\$) <3 THEN ? "FILENA
475 TEST\$=FILENAME\$(1,2)

EG 476 IF TEST\$</"D:" AND TEST\$<>"D1" AND
TEST\$</"D2" AND TEST\$</"D8" THEN ? "D
RIVE #?":GOTO 450

480 IF LEN(FILENAME\$>>>15 THEN ? "FILEN AME TOO LONG!":? :GOTO 450 490 CLOSE #1:OPEN #1,4,0,FILENAME\$
500 TRAP 550:FOR N=1 TO 10 510 INPUT #1,R\$:IF LEN(R\$>>>40 THEN ? " ML

AU TR A 40-COLUMN FILE": POP : CLOSE #1:GO NOT TO 560

520 IF LEN(R\$>>1 THEN CLOSE #1:FLAG=2: POP :? :GOTO 100 UN

530 NEXT N 550 CLOSE #1:? :? :? "NOT A 40-COLUMN TEXT FILE !" 560 ? :? "PRESS ANY KEY TO CONTINUE" OF EL

560 ? :? "PRESS ANY KEY TO CONTINUE" 570 GOSUB 660 580 GOTO 380 590 TRAP 630:CLOSE #1:OPEN #1,7,0,"D:\* .\*":TEST=0:FOR N=1 TO 99:INPUT #1,R\$ 600 IF R\$<11,13>="TXT" THEN TEST=TEST+

 $\mathbf{r}\mathbf{q}$ R\$;" HIL

610 NEXT N GD

630 IF PEEK (195)=136 THEN 650 640 ? "DISK ERROR" 650 IF TEST (1 THEN ? :? "NO 40 COLUMN TEXT FILES FOUND":? FO UM

TEXT FILES FUND...?
655 CLOSE #1:RETURN
660 CLOSE #4:OPEN #4,4,0,"K:":GET #4,B
YTE:CLOSE #4:RETURN
700 ? :? "BE SURE SOURCE DISK IS IN DR
IVE":? :? "BE SURE PRINTER IS READY":?
:? :? "SELECT PAPER SIZE":?
710 ? " (1) Standard 8 1/2 x 11 in GA

DΩ ches."

20 ? :? " (2) Legal size 8 1/2 x 14 inches":POKE 752,1:? "?"; MO

730 G05UB 660 740 IF BYTE=49 THEN F5=66:NL=52:RETURN 750 IF BYTE=50 THEN F5=84:NL=68:RETURN 760 G0T0 730 UU Y T

? CHR\$(125):? :? "WHICH DO YOU WAN 810 ? :? " CK

(1) Change paper after ea ch page" 820 ? :? "?" G L (2) Continuous feed paper

VH 830 GOSUB 660 CV 840 IF BYTE=49 THEN CP=1:RETURN ZM 850 IF BYTE=50 THEN CP=2:RETURN 860 **GOTO 830** 

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## **Tech Tips**

#### GTIA PIXELS IN GR.0 & GR.8

BY GREG VOZZO

This short program shows you how to use those long, multi-colored GTIA pixels in other graphics modes.

There are many powerful uses for this technique, such as creating multi-colored redefined character sets for arcade games. The thickness of the GTIA pixels make letters and numbers almost illegible, but their variety of colors offer an easy way to add color to your characters.

In modes such as Graphics 8, each pixel is one bit wide. Thus, if a bit is set, its corresponding pixel is lit. In these graphics modes, the bit pattern shown in the left half of figure 1 will draw an "A" and uses 64 pixels.

GTIA pixels are four bits wide. In a GTIA mode, the bit pattern would draw a small multi-colored box eight scan lines tall and two pixels wide. The color of each pixel is determined by its bit pattern. The second scan line, for example, contains one pixel of COLOR 1 (or 0001 in binary) and one pixel of COLOR 8 (1000 in binary).

The right half of *Figure 1* shows the color breakdown of the entire character.

#### FIGURE I

DECIMAL	BITMAP	IN BINARY	AS SEEN BY GTIA
0		0000 0000	COLOR 0 COLOR 0
24	XX	0001 1000	COLOR 1 COLOR 8
60	XXXX	0011 1100	COLOR 3 COLOR 12
102	-XXXX-	0110 0110	COLOR 6 COLOR 6
102	-XXXX-	0110 0110	COLOR 6 COLOR 6
126	-xxxxxxx-	0111 1110	COLOR 7 COLOR 14
102	-XXXX-	0110 0110	COLOR 6 COLOR 6
0		0000 0000	COLOR 0 COLOR 0

Learn these simple techniques and you'll have colorful GTIA characters dancing around your screen in no time.

The listing below is a short demo of using GTIA pixels in Graphics 0 and Graphics 8. When RUN, the program asks if you'd like to see mode 9 (16 shades of a single color), mode 10 (9 colors) or mode 11 (16 colors of a single shade). After you choose your mode, the program will draw a series of stripes in Graphics 8, print some text in the text window, then pop into your chosen GTIA mode and rotate the colors. When you're done, press any key to return to the main menu.

## Don't type the TYPO II Codes!

#### ATARI AUDIO CASSETTE

BY GREG VOZZO

This short BASIC program turns on your Atari 410 or 1010 Cassette Recorder's motor, letting you play any audio tape through the TV or monitor speaker. It reactivates itself whenever [RESET] is pressed. To deactivate it, POKE 1791 with any number from 0-254. To re-enable it, POKE 1791 with a 255.

If you want to disable it without disabling the [RESET] reactivation process, simply POKE a 60 into location 54018. POKE 54018 with a 52 to reactivate the motor at any time.

This program is an extension of my DOSINI HOU-DINI, a Tech Tip from January 1988, which explains how to trap [RESET] by modifying part of your Atari's warm-start cycle.



Antic pays \$25 for every original and exclusive Tech Tip submission that we publish. Send your 8-bit or ST disk and printout to: Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. Tech Tips welcomes very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

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